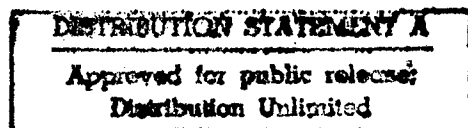


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USSR Report

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BIOMEDICAL AND BEHAVIORAL SCIENCES

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13 February 1985

USSR REPORT
LIFE SCIENCES
BIOMEDICAL AND BEHAVIORAL SCIENCES

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UDC 581.17:582.281.1

CELL WALL DETERMINANTS OF RACIAL SPECIFICITY IN PHYTOFLUOROSIS AGENT
(PHYTOPHTHORA INFESTANS)

Leningrad MIKOLOGIYA I FITOPATOLOGIYA in Russian Vol 18, No 4, Jul-Aug 84
(manuscript received 12 Jul 82) pp 294-300

VASYUKOVA, N. I., SABIRDINA, M. S., CHALENKO, G. I., PLATONOVA, T. A. and
OZERETSKOVSKAYA, O. L., Institute of Biochemistry imeni A. N. Bakh, USSR
Academy of Sciences, Moscow

[Abstract] An analysis was conducted on the cell wall components of the mycelia of *Phytophthora infestans* (Mont.), to determine the racial specificity of such components vis-a-vis compatibility with potato tubers. Evaluation of the electron micrographs of the cell walls, as well as IR analysis of the components indicated that the surface components of compatible and noncompatible *Ph. infestans* differ. Evidently, compatible *Ph. infestans* possess surface components that render them compatible with a given potato species, and enhance the infestious process. Since the incompatible *Ph. infestans* were non-pathogenic, such metabolites in the compatible isolates seem to function to overcome protective reactions on the part of the plant. Differences in the cell wall components are abolished by boiling for 30 min in water. The cell walls of incompatible races acquire the ability to potentiate the infectious process, and the compatible races become even more pathogenic. The metabolites responsible for pathogenicity of the compatible races can be eliminated by hydrolysis with 1 N KOH, rendering the resultant cell wall preparation ineffective. Figures 1; references 19: 6 Russian, 13 Western.

[088-12172]

UDC 632.937.1.02:582.288.22

CONTROL OF POWDERY MILDEW FUNGI BY HYPERPARASITIC AMPELOMYCES FUNGI

Leningrad MIKOLOGIYA I FITOPATOLOGIYA in Russian Vol 18, No 4, Jul-Aug 84
(manuscript received 13 Dec 82) pp 333-338

PUZANOVA, L. A., Kuban Agricultural Institute; North Caucasian Zonal Scientific Research Institute of Horticulture and Viniculture, Krasnodar

[Abstract] Studies were commenced in 1970 in the Krasnodar Kray to determine the natural extent of infection of powdery mildew fungi by the hyperparasitic

Ampelomyces fungi, and their inhibitory effects on the former. Of the 125 species of various plants collected that were infected with powdery mildew, 88 were also infected with Ampelomyces sp. Only on barley, oats, and wheat was the powdery mildew fungus free of Ampelomyces. These observations indicate that, in the Krasnodar Kray, Ampelomyces has a wider distribution than in the central regions of the USSR, and species identification demonstrated that the following powdery mildews were susceptible to inoculation by the hyperparasite: Sphaerotheca pannosa, S. fuliginea, Erysiphe cichoracearum, and E. communis. The species of the hyperparasite frequently encountered under natural conditions were Ampelomyces artemisiae, A. gypsophilae and A. novae. Experimental studies were a 0.2% suspension of A. artemisiae used for sprinkling cucumbers showed a reduction in the incidence of powdery mildew of 88.2-98.5%. References 14: 1 Ukrainian, 11 Russian, 2 Western. [088-12172]

UDC 581.192.7

DYNAMICS OF UPTAKE AND DECOMPOSITION OF 2-CHLOROETHYLPHOSPHONIC ACID IN WINTER RYE

Moscow FIZIOLOGIYA RASTENIY in Russian No 5, Sep-Oct 84 (manuscript received 24 Jan 84) pp 921-927

KREYTSBERG, O. E., ROMANOVSKAYA, O. I. and PAVULINYA, D. A., Institute of Biology, Latvian SSR Academy of Sciences, Riga

[Abstract] Results are presented from studies of the uptake and accumulation of 2-chloroethylphosphonic acid (CEPA), the dynamics of its decomposition with liberation of ethylene as a function of temperature, and also the properties of CEPA residues found in winter rye plants. The data show that after sprinkling with camposan M, the active ingredient of this substance --CEPA--is rapidly taken up by sprouts and moves into new organs as they grow. However, a significant portion of the substance remains on the surfaces of the tissues at least for a few days. The residual quantities of CEPA found in winter rye grain consist largely (67 to 80%) of the bonded form. The remaining portion of CEPA, hydrolyzable in an alkaline medium to liberate ethylene, is apparently not fully free, unaltered CEPA. It may contain CEPA conjugates which when heated in alkaline hydrolysis do form ethylene. The results show that CEPA enters the plant through the roots as well as the above ground portion and can move into untreated organs both basipetally and acropetally. After it is taken up, CEPA begins to decompose to form exogenous ethylene, the rate of ethylene liberation being 60 to 70 times greater than liberation by control plants for the first few days after treatment. Figures 2; references 19: 6 Russian, 13 Western. [1010-6508]

FOREST-AGRICULTURAL SYSTEM OF RECLAIMED SEMIARID LANDS IN CASPIAN REGION

Moscow IZVESTIYA AKADEMII NAUK SSSR, SERIYA BIOLOGICHESKAYA in Russian No 5, Sep-Oct 84 (manuscript received 10 Jan 83) pp 675-686

VOMPERSKIY, S. E. and OLOVYANNIKOVA, I. N., Forestry Laboratory, USSR Academy of Sciences, Uspenskoye

[Abstract] A summary is presented of the results achieved in a 30 year study on the creation of a forest-agricultural system in the semiarid Caspian regions characterized by solonetz soils. High yields of grain crops (wheat, barley) were obtained in the man-made ecosystem by employing deep ploughing (40-50 cm), addition of gypsum, and locating the furrows between rows of Chinese elms 40-60 m apart. The narrow but long tracts of trees are alternated with snow-retention fields in a 1:3 ratio, ensuring additional moisture content and promoting desalinization of the soil. Figures 5; references 24: all Russian.

[080-12172]

ACTIVATION AND STABILIZATION OF FIREFLY LUCIFERASE IN LECITHIN LIPOSOMES

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 278, No 4, Oct 84
(manuscript received 25 Apr 84) pp 1008-1011

UGAROVA, N. N., DUKHOVICH, A. F. and BEREZIN, I. V., corresponding member,
USSR Academy of Sciences, Moscow State University imeni M. V. Lomonosov

[Abstract] The importance of interaction with phospholipids for firefly (*Luciola mingrelica*) luciferase activity was investigated in an in-vitro liposomal system. The purified enzyme was incorporated into liposomes prepared from egg yolk L-alpha-lecithin, with reaction kinetics followed with respect to both ATP and luciferin. Incorporation of luciferase into liposomes was accompanied by noncompetitive activation of the enzyme, as indicated by the lack of change in K_M while V_{max} increases. Thermal inactivation kinetics studied in the presence of varying concentrations of lecithin corresponded to a first order reaction, and demonstrated that liposome-entrapped luciferase was ca. 20 times more stable than aqueous preparations of the enzyme. After 21 h of incubation at 18°C the native enzyme showed complete loss of activity, while in the presence of 5 mg/ml of lecithin 50% of the activity was retained. Differences in reaction mechanisms are indicated by the fact that in aqueous preparations the bioluminescent signal is in the form of a sharp peak, while with liposomes the signal lasts for several minutes. The latter phenomenon is indicative of an increase in yield of the excited-state product, the breakdown of which results in the luminescent signal. Figures 3; references 7: 4 Russian, 3 Western.
[1582-12172]

INTERACTION OF BISPHOSPHORYLATED METHANES WITH MAMMALIAN ESTERASES

Moscow BIOORGANICHESKAYA KHIMIYA in Russian Vol 10, No 10, Oct 84
(manuscript received 7 Mar 84) pp 1347-1352

MAKNAYEVA, G. F., SHATAYEVA, G. A., YANKOVSKAYA, V. L., FETISOV, V. I.,
LOSHADKIN, N. A., MARTYNOV, I. V., KHASKIN*, B. A. and SHELUCHENKO*, O. D.,
Institute of Physiologically Active Substances, USSR Academy of Sciences,
Chernogolovka; *All-Union Scientific Research Institute of Chemical Plant
Protection, Moscow

[Abstract] Studies on selective esterase inhibitors to function as safe insecticides led to the synthesis of bisphosphorylated methanes--carbethoxybis-(dialkoxyphosphorylthio) (I) and carbethoxydialkoxy-thiophosphoryloxydialkoxyphosphoryl (II) methanes--and their testing as substrates for mammalian esterases. Compounds in the I and II series were found to be irreversible inhibitors of human erythrocyte acetylcholinesterase, equine serum butyrylcholinesterase, and rat liver carboxylesterase. Inhibition of carboxylesterase was entirely irreversible, whereas kinetic analysis with acetyl- and butyrylcholinesterase indicated more complex mechanisms involving both irreversible and reversible inhibition. Compounds in the I and II series showed greater specificity in inhibiting butyrylcholinesterase than the other esterases, with the bimolecular rate constant for reaction with the first enzyme (k^{II} ca. $10^8 \text{ M}^{-1} \cdot \text{min}^{-1}$) exceeding the rate constants for the other esterases by more than two orders of magnitude. The high binding constants of II and I for butyrylcholinesterase ($K_a = 10^{-8}$ to 10^{-9} M) were attributed to hydrophobic interactions and, in the case of II, to the thionephosphoryl group affinity for hydrophobic sites on the enzymes. Figures 1; references 14: 8 Russian, 6 Western.
[1588-12172]

NONLINEAR 'HYDROPHOBICITY-ANTIESTERASE ACTIVITY' MODEL FOR SELECTED ORGANOPHOSPHORUS COMPOUNDS

Moscow BIOORGANICHESKAYA KHIMIYA in Russian Vol 10, No 10, Oct 84
(manuscript received 7 Mar 84) pp 1353-1358

FETISOV, V. I., MAKHAYEVA, G. F., LOSHADKIN, N. A., MARTYNOV, I. V. and
KHASKIN*, B. A., Institute of Physiologically Active Substances, USSR Academy
of Sciences, Chernogolovka; *All-Union Scientific Research Institute of
Chemical Plant Protection, Moscow

[Abstract] The relationship between hydrophobicity and antiesterase activity was subjected to mathematical analysis, employing studies were carbethoxybis-(dialkoxyphosphorylthio)- and carbethoxydialkoxythiophosphoryloxydialkoxyphosphorylthio-methanes and acetyl- and butyrylcholinesterases and

carboxylesterase. Both parabolic and bilinear regression equations were employed in the analysis of the binding data. The bilinear model of Kubinyi [Kubinyi, H., *Arzneimittel Forschung*, 26(11): 1991-1997, 1976] was found particularly effective in relating inhibition to hydrophobicity of both series of compounds. The general principles outlined in this study are also applicable to other types of organophosphorus esterase-inhibitors. Figures 1; references 8: 2 Russian, 6 Western.
[1588-12172]

UDC 547.854':455.522:535.347

DETERMINATION OF ANTI-SYN EQUILIBRIUM CONSTANTS FOR 5-SUBSTITUTED 2'-DEOXYURIDINES BY CD SPECTROSCOPY

Moscow BIOORGANICHESKAYA KHIMIYA in Russian Vol 10, No 10, Oct 84
(manuscript received 10 Feb 84) pp 1359-1365

VOLODIN, Yu. Yu., KIKOT', B. S., LOBACHEV, V. M. and PREOBRAZHenskAYA, M. N.,
All-Union Oncological Scientific Center, USSR Academy of Medical Sciences,
Moscow

[Abstract] Temperature effects on CD spectra were employed in the determination of anti-syn equilibrium constants of 5-substituted 2'-deoxyuridines. The bioactive α and β anomers of pyrimidine nucleosides contained electron donor substituents (CH_3 , $\text{Si}(\text{CH}_3)_3$, $\text{CH}(\text{OC}_2\text{H}_5)\text{CH}(\text{CH}_3)_2$) on the 5 position of the uracil ring, or an electron acceptor $(\text{C}(\text{OH})(\text{CF}_3)_2)$. Data analysis assumed equality of the absolute values of the limit parameters (Δ_ϵ) for the anti and syn conformers ($\Delta_{\epsilon\alpha} = -\Delta_{\epsilon\beta}$). The findings indicated that in aqueous and alcoholic solutions the nucleosides under investigation existed predominantly in the anti-conformation. In aqueous solutions the anti conformers accounted for 95-99% of the nucleosides, while transition into ethanol was accompanied by an increase in the syn conformers of 5-20%. Thymidine was found most susceptible to solvent change, and showed the largest syn proportion (20%) on water-to-alcohol transition. Figures 4; references 17: 5 Russian, 12 Western.
[1588-12172]

CARBOHYDRATE-CONTAINING COPOLYMERS WITH STREPTOCOCCUS PNEUMONIAE TYPE 3
CAPSULAR POLYSACCHARIDE SPECIFICITY

Moscow BIOORGANICHESKAYA KHIMIYA in Russian Vol 10, No 10, Oct 84
(manuscript received 21 Mar 84) pp 1376-1384

CHERNYAK, A. Ya., ANTONOV, K. V., DMITRIYEV, B. A., KOCHETKOV, N. K.,
PADYUKOV*, L. N. and TSVETKOVA*, N. V., Institute of Organic Chemistry imeni
N. D. Zelinskiy, USSR Academy of Sciences, Moscow; *Central Scientific
Research Institute of Vaccines and Sera imeni I. I. Mechnikov, Moscow

[Abstract] Description is provided of the chemical approach to the synthesis of a carbohydrate-containing copolymers with the specificity of the capsular polysaccharide of Streptococcus pneumoniae type 3. Cellobiose was chemically modified to produce allyl beta-glycoside of cellobiuronic acid, and the latter was transformed into a polymer by copolymerization with acrylamide. The resultant 100,000 to 300,000 MW copolymers contained a 27% carbohydrate content and, in immunoenzyme assays, were found to share the immunospecificity of streptococcus pneumoniae type 3, ascribable to the capsular polysaccharide. Figures 2; references 19: 7 Russian, 12 Western.
[1588-12172]

UDC 581.143.22.04

ANALYSIS OF FORMATION OF THICKENINGS ON ROOTS EXPOSED TO ISOPROPYL-N-3-
CHLOROPHENYL CARBAMATE

Moscow FIZIOLOGIYA RASTENIY in Russian No 5, Sep-Oct 84 (manuscript received
11 Nov 83) pp 914-920

BYSTROVA, Ye. I., Institute of General and Inorganic Chemistry imeni N.S.
Kurnakov, USSR Academy of Sciences, Moscow

[Abstract] A study is reported of the relationship between cell growth in length and width and an analysis of the place and time of hypertrophic expansion of cells upon exposure to isopropyl-N-3-chlorophenylcarbamate (chloro-IPC). The effect of chloro-IPC in various concentrations on growth and thickening of roots of several plants and its influence directly on length and width of cells in the growing portion of a corn root were studied. It is found that the thickness of roots increases at higher concentrations when root growth is suppressed. The concentration at which root length growth reached 50% of the control was several times less than the concentration at which thickness reached half the maximum. The concentration at which root length growth is suppressed by 30 to 50% and at which it stops are specific, differing from the saturated solution concentration by a factor of more than 100, while the concentration at which the tips of roots reach maximum thickness

may be nonspecific, differing from the saturated solution by less than 100 times. Inhibition of root growth and thickening of roots therefore result from different mechanisms of action of the substance. This indicates that the processes of cell growth in length and width are different processes. Figures 2; references 18: 4 Russian, 14 Western.
[1010-6508]

UDC 547.963.32.07

RAPID METHOD OF DNA ASSEMBLY FROM SYNTHETIC OLIGODEOXYRIBONUCLEOTIDES

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 278, No 5, Oct 84
(manuscript received 21 May 84) pp 1250-1253

KOROBKO, V. G., DOBRYNIN, V. N., BOLDYREVA, Ye. F., SEVERTSOVA, I. V. and Kolosov, M. N., academician, Institute of Bioorganic Chemistry imeni M. M. Shemyakin, USSR Academy of Sciences, Moscow

[Abstract] Description is provided of a rapid method for the assembly of double-stranded DNA molecules from synthetic oligodeoxyribonucleotides, which eliminates the need for removal of intermediate products. The essential steps include the ligation of both strands separately, terminal addition of sense strands at 3-ends, and cloning in special vectors (pBBV) and recombinant selection after transformation of *E. coli*. This approach allows the synthesis of double-stranded DNA from relatively short oligonucleotide segments, and offers the advantages of time economy and simplicity. In addition, the recombinant plasmids constitute a permanent biological source of pure, synthetic DNA. This approach has been utilized successfully in the synthesis of interferon alpha-2 gene, the end fragment of *E. coli* lacZ gene, and phage T5 promoter P25. Figures 2; references 13: 6 Russian, 7 Western.
[1596-12172]

UDC 547.963.3

TEMPERATURE FACTOR IN RECONSTRUCTION OF RIBOSOMAL 30S SUBUNIT

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 278, No 5, Oct 84
(manuscript received 7 May 84) pp 1247-1250

AGALAROV, S. Ch., GULYAMOVA, D. E. and SERDYUK, I. N., Protein Institute, USSR Academy of Sciences, Pushchino, Moscow Oblast

[Abstract] Description is provided of experimental conditions employed in studies on the importance of the temperature factor in the assembly and disassembly of the 30S ribosomal subunit. The studies conducted in an *in vitro* system, with LiCl and urea treatment of the poly phenylalanine 30S subunit, demonstrated that dissociation of the 16S RNA and protein components and

reassembly could take place at room temperature. These observations indicate that the selected ionic milieu (2 M LiCl + 2.5 M urea) represented the optimum environment for the isolation of undamaged ribosomal components. These findings, in distinction to the common in vitro procedures at 37-40°C, indicate the elevated temperatures are a prerequisite for the reassembly of 'damaged' ribosomal components, since such temperatures appear to favor renaturation of the ribosomal proteins. References 13: 1 Russian, 12 Western. [1596-12172]

UDC 547.292.94:577.334

SPIN LABELED PHOSPHOLIPIDS WITH IMIDAZOLINE NITROXYL FRAGMENT

Moscow BIOORGANICHESKAYA KHIMIYA in Russian Vol 10, No 10, Oct 84
(manuscript received 19 Apr 84) pp 1423-1425

BORIN, M. L., DAVIDENKO, N. N., SHVETS*, V. I., KEDIK, S. A. and VOLODARSKIY**, L. B., Scientific Research Institute for Biological Testing of Chemicals, Kupavna, Moscow Oblast; *Moscow Institute of Fine Chemical Technology imeni M. V. Lomonosov; **Novosibirsk Institute of Organic Chemistry, Siberian Department, USSR Academy of Sciences

[Abstract] Description is provided of the synthesis of spin-labeled phosphatidylethanolamine, phosphatidylserine, phosphatidylglycerol and phosphatidic acid, utilizing essentially a previously described approach [Bergel'son LD et al., Preparative Lipid Biochemistry (in Russian), Moscow, Nauka, 1981, pp. 156, 167]. The spin-labeled compounds with imidazoline nitroxyl fragment were prepared by incubating labeled phosphatidylcholine with phospholipase D and the corresponding alcoholic component in acetone buffer at pH 5.6. The products were subsequently isolated on silicagel TLC in 15-20% yields. The ESR spectra revealed typical triplets (a_N 14.5 mT). References 8: 6 Russian, 2 Western. [1588-12172]

UDC 577.17

NONCHROMOSOMAL ELEMENTS OF ESCHERICHIA COLI IN FRACTION CONTAINING NUCLEOPROTEIN COMPLEXES OF REVERSE TRANSCRIPTASE WITH ENDOGENOUS MATRIX

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 277, No 5, Aug 84
(manuscript received 19 Mar 84) pp 1264-1266

ROMASHCHENKO, A. G., VOROB'YEVA, N. V., GRABKINA, O. A., KISELEVA, Ye. V., SERDYUKOVA, N. A. and KHRISTOLYBOVA, N. B., Institute of Cytology and Genetics, Siberian Department, USSR Academy of Sciences, Novosibirsk

[Abstract] A study is presented of the structure of nucleoprotein complexes of the D fraction, which contains most of the DNA polymerase and is separated by differential centrifugation from a spheroplast lysate, by electron

microscope analysis. For further purification of the complex performing reverse transcription, the D fraction was centrifuged in a saccharose density gradient. Macromolecule delamination methods in 3 of the density gradient fractions revealed circular DNA molecules varying in length from 1-3 to 25 μ m, significant numbers present in replicative form. The data presented in the article indicate that the method of separation of the D fraction allows production of nonchromosomal elements with retention of their supermolecular organization. The variety of nonchromosomal elements differing in molecular mass, organization and method of replication indicate that the D fraction can be recommended as an object for comprehensive study of the structure and functions of nonchromosomal E. coli DNA. Figures 2; references 13: 6 Russian, 7 Western.

[002-6508]

UDC 581.134.3:582.26

ANTIBACTERIAL ACTIVITY OF DIATOMS. REPORT 1. NITZSCHIA OVALIS LIPIDS AND THEIR ANTIBACTERIAL ACTIVITY

Moscow FIZIOLOGIYA RASTENIY in Russian No 5, Sep-Oct 84 (manuscript received 2 Feb 84) pp 944-950

MAKSIMOVA, I. V., MALAKHOVSKAYA, O. O. and PRIYADIL'SHCHIKOVA, Ye. G.,
Biology Faculty, Moscow State University imeni M. V. Lomonosov

[Abstract] This is the first in a series of studies on regulation of the population of accompanying microflora in diatom cultures. Its purpose is to determine antibacterially-active components of the cell lipid fraction and medium in cultivation of the marine diatom Nitzshia ovalis in a cumulative culture. The studies show that as N. ovalis grows, the medium is found to contain lipid compounds. Their content increases at the beginning of the logarithmic growth phase, then decreases in the middle of the logarithmic phase and increases again, reaching a maximum the steady growth phase. Analysis of the lipid extract showed quantitative predominance of nonpolar lipids. The antibacterial activity of the lipid extract appears only upon exposure to light. After preliminary exposure to light, antibacterial activity appears in darkness. This is related to the formation of new, more polar compounds, apparently products of photo-oxidation of fatty acids and sterins. Figures 3; references 20: 9 Russian, 11 Western.

[1010-6508]

EFFECT OF FUNGICIDES ON RESPIRATORY GAS EXCHANGE IN WHEAT ROOTS

Moscow FIZIOLOGIYA RASTENIY in Russian No 5, Sep-Oct 84 (manuscript received 4 Oct 83) pp 896-901

SAFINA-OSTASHEVSKAYA, G. F. and GORDON, L. Kh., Kazan' Institute of Biology, Kazan' Branch, USSR Academy of Sciences

[Abstract] A study was made of the influence of certain fungicides on the respiration of wheat roots and the oxidation of the fungicides in plant tissues. Systemic fungicides vitavax, plantvax and bleton were used in the experiments. Experiments were performed on cut roots from 6-day sprouts from Moscow 35 wheat grown in a $2.5 \cdot 10^{-4}$ M CaCl_2 solution. The experiments showed that during the first two to three hours of incubation the fungicides inhibit respiration of the roots by approximately 30-40%. Inhibition under the influence of vitavax and bleton is then replaced by stimulation of oxygen consumption, by about 50 to 70% after 6 hours. Stimulation is not observed with plantvax. The results showed that the fungicides inhibit mitochondrial oxidation in the first segment of the electron transport chain, which apparently leads to a deficit of energy and accompanying loss of potassium ions by root cells. Stimulation of oxygen consumption upon longer incubation may be related to their oxidative metabolism. Bleton, in particular, is subject to oxidative demethylation with the formation of formaldehyde. Figures 2; references 26: 23 Russian, 3 Western.
[1010-6508]

XphI: NEW SITE-SPECIFIC XANTHOMONAS PHASEOLI ENDONUCLEASE

Moscow BIOORGANICHESKAYA KHIMIYA in Russian Vol 10, No 10, Oct 84 (manuscript received 10 Jan 84; in final form 13 Mar 84) pp 1333-1335

BUNINA, Z. F., KRAMAROV, V. M., SMOLYANINOV, V. V. and TOLSTOVA, L. A., All-Union Scientific Research Institute of Applied Microbiology, Serpukhov, Moscow Oblast

[Abstract] A novel endonuclease, designated XphI, was isolated from Xanthomonas phaseoli by gel filtration on Ultrogel Aca-44 and subsequent chromatography on phosphocellulose. Comparative studies showed that XphI recognizes the 5'-CTGCAG-3' sequence on double stranded DNA, the same site recognized by PstI. The final enzyme preparation was free of nonspecific nucleases. Methylation of the DNA substrate by methylase prevented hydrolysis by both XphI and PstI. Molecular weight determinations by the gel filtration technique yielded a value of $47,000 \pm 2000$ for XphI. Figures 1; references 10: 2 Russian, 8 Western.
[1588-12172]

SYNTHESIS OF 11Z-RETINAL

Moscow BIOORGANICHESKAYA KHIMIYA in Russian Vol 10, No 10, Oct 84
(manuscript received 23 Mar 84) pp 1409-1413

KHODONOV, A. A., TKACHEVSKAYA, Ye. P., MITSNER, B. I., ZVONKOVA, Ye. N. and
YEVSTIGNEYEVA, R. P., Institute of Fine Chemical Technology imeni M. V.
Lomonosov, Moscow

[Abstract] The Wittig reaction was employed in the synthesis of 11Z-retinal, employing the approach previously used to synthesize 13Z-retinal [Khodonov, AA, et al., Bioorgan. Khim., 10(3):408-414, 1984]. In the method employed, the reaction of (2E,6E)-8-triphenylsilyloxy-2,6-dimethylocta-2,6-diene-4-yn-1-al with beta-cyclogeranylidinetriphenylphosphorane resulted in complete retention of E-11,12-dehydroretinol. 11Z-Retinal was obtained in preparative quantities; the method can be further expanded to various analogs of 11Z-retinal by using different phosphoranes. References 11: 3 Russian, 8 Western.
[1588-12172]

EFFECTS OF SOLUTION TONICITY ON VOLUME CHANGES IN ISOLATED SNAIL NEURONS

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 278, No 5, Oct 84
(manuscript received 27 Apr 84) pp 1238-1240

AYRAPETYAN, S. N., STAMBOLTSYAN, Kh. V. and SULEYMAN, M. A., Institute of
Experimental Biology, Armenian SSR Academy of Sciences, Yerevan

[Abstract] Volume changes in isolated snail neurons were studied by photoelectric measurements on neurons immersed in Ringer's solution at 22-25°C, with the tonicity varied from 0.05 to 2.5, while maintaining a constant ionic strength. Distinct step-wise volume changes were noted with each unit change in the osmotic pressure, which were similar to the changes seen on activation and inactivation of the sodium pump. Each step-wise change corresponded approximately to the diameter of the neuron (3-5 μm). However, with repeated changes in the tonicity of the bathing fluid the transitions between swelling and shrinking became smoother. The magnitude of the change did not significantly depend on the external calcium concentration, although in the presence of high calcium concentrations the process of change was slowed down. These changes were evidently due to extension and folding of the cell membrane. It remains to be seen whether myosin-like molecules are involved in such processes, but it appears safe to conclude that such changes involve shielding and exposure of ATPase and chemoreceptive molecules. Consequently, receptor binding, excitability, and enzymatic activity of the membrane should also show discrete, step-wise changes. Figures 2; references 6: 1 Russian, 5 Western.
[1596-12172]

OBSERVATION OF NUCLEOTIDE BASE POLYHYDRATES IN VACUUM BY LOW TEMPERATURE FIELD MASS SPECTROMETRY

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 277, No 5, Aug 84
(manuscript received 24 Jan 84) pp 1252-1255

VERKIN, B. I., academician, Ukrainian Academy of Sciences, SUKHODUB, L. F.
and GAYVORONSKIY, D. A., Institute of Low Temperature Physics and Engineering,
USSR Academy of Sciences, Kharkov

[Abstract] This paper reports on the observation of large clusters of $M(H_2O)_n$, (where $n=128$) of methyl substituted uracyl and cytosine in a vacuum by sealed mass spectrometry at an emitter temperature of 77 K. Experiments were performed on a magnetic mass spectrometer equipped with a laboratory field ion source with deep cooling of the emitter. Evaporated M (base molecules) and H_2O were condensed on the surface of the cooled emitter and interacted with each other forming two groups of clusters: autoassociates of water and base hydrates. Condensation was accompanied by ionization of particles, resulting in recording of the low temperature field mass spectrum. The results produced demonstrate the promise of utilization of low temperature field mass spectrometry in studies of fine hydration effects of isolated biomolecules in a vacuum. The possibility is demonstrated of studying the hydration of more complex structures, paired complexes of bases, indicated by the presence of ions with m/e corresponding to mono-, di- and tri-hydrates of the m^1 Ura dimer. Figures 3; references 9: 3 Russian, 6 Western.

[002-6508]

UDC 577.352.27:547.964.4(057+0.4)

STRUCTURAL FEATURES OF AGGREGATES FORMED FROM HYDRATION OF MIXTURES OF PHOSPHATIDYLCHOLINE AND DEFINED HYDROPHOBIC POLYPEPTIDES

Moscow BIOORGANICHESKAYA KHIMIYA in Russian Vol 10, No 10, Oct 84
(manuscript received 22 Dec 83; in final form 10 Apr 84) pp 1401-1408

ZVONKOVA, Ye. N., KHABAROVA, Ye. I., VASILENKO, I. A. and YEVSTIGNEYEVA, R. P.,
Moscow Institute of Fine Chemical Technology imeni M. V. Lomonosov

[Abstract] NMR and IR spectroscopic studies were conducted on various hydrophobic peptides (poly(L-phenylalanine), poly(L-alanylglycine), poly(L-phenylalanyl-L-alanylglycine), poly(L-phenylalanylglycyl-L-alanine) synthesized to provide hydrophobic peptides for reaction with egg phosphatidylcholine, and on the resultant structures obtained by hydration of such mixtures. Analysis of the NMR patterns in conjunction with electron micrographs indicated that hydration of such mixtures results either in the formation of lamellar structures or morphological alterations in the condensed phospholipid phase. Polypeptides containing phenylalanine were found to be uniformly compatible with a bilayer organization of the lipid phase. Figures 5; references 19: 7 Russian, 12 Western.

[1588-12172]

SPIRAL WAVES IN ACTIVE MEDIA

Gor'kiy IZVESTIYA VYSSHIKH UCHEBNYKH ZAVEDENIY: RADIOFIZIKA in Russian No 9, Sep 84 (manuscript received 28 Jul 83) pp 1116-1129

KRINSKIY, V. I., MIKHAYLOV, A. S., PANFILOV, A. V., YERMAKOVA, Ye. A. and TSYGANOV, M. A., Institute of Biological Physics, USSR Academy of Sciences

[Abstract] Mathematical analysis is presented for the calculation of the radii of spiral waves as a function of the parameters of an excitable medium, for those situations in which the spiral wave core is large in comparison with the diffusion front of the wave. An excitable medium is defined for the purposes of this study as one consisting of inter related autooscillating, bistable or excitable (monostable) elements. The theoretical calculations were applied to an analysis of the fundamental parameters of spiral waves with arbitrary topological characteristics, assuming application of the law of dispersion of periodic planar waves. The formulations cover waves within ring channels and around circular openings in unbounded excitable media. Figures 8; references 30: 21 Russian, 9 Western.
[052-12172]

UDC 612.825.55:612.858.72

CODING OF AM STIMULI IN INFERIOR COLLICULI OF BATS

Leningrad VESTNIK LENINGRADSKOGO UNIVERSITETA: BIOLOGIYA in Russian No 15, Issue 3, Aug 84 (manuscript received 7 Jun 83) pp 54-61

ANDREYEVA, N. G. and VASIL'YEV, A. G.

[Abstract] Electrophysiological studies were conducted on the correlation between acoustic input signals and electrical responsiveness of the inferior colliculi in the horseshoe bat, since in this and other species these structures appear to be involved in the coding of such sensory input. Examination of 122 neurons in the inferior colliculi showed that 38 responded to AM signals as they did to monochromatic signals. However, 84 neurons responded to the AM stimuli with a discharge frequency equal to the FM of the stimulus, i. e., synchronized action potentials, while responding to monochromatic stimuli either with phasic or 'tonic' reactions. Synchronization was also evident on the summated response, and the amplitude of the response was virtually constant throughout the entire signal. Since a linear relationship prevailed between the frequency of modulation and the frequency of the action potentials of the inferior collicular neurons, it appears that it represents temporal coding (in terms of the action potential frequency) of the frequency of changes in the amplitude of the AM signal in the 20-200 Hz range. Figures 4; references 7: 6 Russian, 1 Western.
[095-12172]

UDC 577.15.062

METAL-BONDING CYTOPLASMIC PROTEINS OF COLLISELLA CASSIS MOLLUSK

Vladivostok BIOLOGIYA MORYA in Russian No 2, Mar-Apr 84 (manuscript received 17 Aug 82) pp 59-62

YEVTUSHENKO, E. S., KHRISTOFOROVA, N. K. and LUK'YANOVA, O. N., Laboratory of Comparative Biochemistry, Institute of Marine Biology; Laboratory of Geochemistry, Pacific Institute of Geography, Far Eastern Scientific Center, USSR Academy of Sciences, Vladivostok 690022

[Abstract] A study is reported of the interaction of lead, zinc and copper with the cytoplasmic protein of the mollusk Collisella cassis from water adjacent to areas where polymetallic ores are mined and processed. The area

of study was the northwest coast of the Sea of Japan. The mollusks were collected from a polluted area located in a bay with a high content of metal and a control area 6.5 km distant. Some 40 to 90 mg of protein was placed in a column filled with sephodex and eluted with 0.05 M tris-HCl buffer at pH 7.5 at 15-20 ml/hr. The yield of protein from the column was determined by optical densitometry and by the method of Lowry. Metals were determined in the summary supernatant and protein fractions by atomic absorption after autoclave acid decomposition of specimens. In spite of the high content of lead in the soft tissues of the mollusk from the polluted station, mineralizates of protein preparations did not contain them. This indicates that extraction of cytoplasmic proteins does not yield the answer to the question of the location of lead in the cells or its relationship to organic ligands. In contrast to lead, zinc and copper are bonded to the cytoplasmic protein, although it is known that significant quantities of zinc and copper can be retained in intracellular granules. References 17: 3 Russian, 14 Western.
[1515-6508]

UDC 574.91:574.652(265.4)

ROLE OF SHIPS IN INTRODUCTION OF HYDROIDS, POLYCHAETES AND BRYOZOANS INTO SEA OF JAPAN

Vladivostok BIOLOGIYA MORYA in Russian No 2, Mar-Apr 84 (manuscript received 13 Apr 82) pp 19-26

BAGAVEYEVA, E. V., KUBANIN, A. A. and CHAPLYGINA, S. F., Laboratory of Shelf Communities, Institute of Marine Biology, Far Eastern Scientific Center, USSR Academy of Sciences, Vladivostok 690022

[Abstract] Three groups of organisms fouling ship hulls in various stages of acclimatization in the northwest Sea of Japan are distinguished. Potential immigrants include species for which there is yet no information on the possibility of their surviving and reproducing in the new region, including the polychaetes *Autolytus kiiensis*, *Neanthes succinea* and *Platynereis dumerilii*, the Bryozoans *Callopora lineata*, *Filicrisia iranciscana* and *Membranipora savartii*, all of which have been observed only on ships arriving from afar. The second group includes species in intermediate phases of acclimatization such as the hydroid *Gonothyrea loveni*, the Polychaetes *Polydora limicola* and *Hydroides elegans*, the Bryozoans *Bugula californica* and *Conopeum tubigerum*, all of which are found on ships of the service fleet and port structures, indicating that they have reproduced in the area. The final group is naturalized species such as the Hydroids *Clytia lanquida*, the Bryozoans *Bowerbankia gracilis* and *Conopeum seurati*, found both in fouling communities and in benthic communities in the Sea of Japan. Figures 2; references 46: 26 Russian, 20 Western.
[1515-6508]

ENVIRONMENT

WATER POLLUTION CONTROL IN FERGANA OBLAST

Tashkent PRAVDA VOSTOKA in Russian 2 Oct 84 p 4

TUGUSHEV, Sh., PRAVDA VOSTOKA correspondent, Fergana

[Abstract] Water pollution problems along the Syr-Dar'ya river are discussed. Attempts to reduce water pollution by legal procedures has resulted in the issue of 2,098 orders and exactment of 10,885 rubles in fines by the Fergana Oblast Administration of Water Resources in the last year. Analysis of water, fish, algae and soil from the Syr-Dar'ya has revealed high levels of toxic chemicals with most pollutants coming from industrial enterprises. The need for development of more purification stations and plant sewage systems was discussed. Fish kills caused by plants were described and discussed. The role of animal husbandry complexes in the increased pollution levels was described and discussed and the many violations of rules for proper transportation, storage and use of toxic chemicals and fertilizers were cited. [083-2791]

UDC 502.7

PREVENTION OF OIL POLLUTION OF OCEAN

Moscow VESTNIK AKADEMII NAUK SSSR in Russian No 10, Oct 84 pp 39-46

NESTEROVA, M. P., candidate of technical sciences

[Abstract] The urgency of marine pollution by oil is illustrated by the experience of the International Meteorologic Organization, which found that 6-9% of 28,000 oceanic water samples were polluted with oil. The incidence was highest in coastal waters, and indicated that the rate of pollution exceeds biodegradation and chemical transformation in the oceans of the world. A survey is presented of the various methods employed to minimize oil pollution and to clean up oil spills, with cursory description of the emulsifying agents and various absorbents and dispersing agents. Various plant, mineral and synthetic agents are undergoing trials to test their practical applicability, with a key concern shown for the fact that they themselves should not constitute a threat to the environment. [584-12172]

FOOD TECHNOLOGY

DIRECT WAY TO HEALTH

Moscow PRAVDA in Russian 1 Oct 84 p 7

BREKHMEN, I., doctor of medical sciences, professor, Vladivostok

[Abstract] As a result of recent advances in medicine people have come to rely too much on medication, and forget the fact that optimum health can be maintained by proper nutrition, exercise, and a healthy state of mind. This is not to underestimate the physiological value of such natural products as eleutherococcus, that have been shown to exert a tonic effect and prevent the development of various degenerative diseases. As a reflection of the care and concern of the Soviet government for the welfare of the Soviet people, a "well service" will soon be established to promote health and holistic medicine in the USSR.

[060-12172]

GENETICS

UDC 575.1

IN VITRO REGENERATION OF DIFFERENT WINTER WHEAT (TRITICUM AESTIVUM) VARIETIES

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 278, No 5, Oct 84
(manuscript received 7 Jun 84) pp 1231-1235

GAPONENKO, A. K., MUNTYAN, M. A., MALIKOVA, N. I. and SOZINOV, A. A.,
academician of the Ukrainian SSR Academy of Sciences and of the All-Union
Academy of Agricultural Sciences, Institute of General Genetics imeni
N. I. Vavilov, USSR Academy of Sciences, Moscow

[Abstract] Studies were conducted on in vitro plant regeneration to evaluate various factors that affect regeneration of several wheat genotypes (*Triticum aestivum*): (Mironovskaya 808 x Bezostaya 1)F₈, Zarya, Mironovskaya 808, and a wheat-wheatgrass hybrid. Using immature germ bud explants, a high frequency (61.66 to 87.61%) of callus induction was attained. Analysis of morphogenetic characteristics demonstrated that the highest percentage of embryogenetic calluses was obtained on RM-64 medium [Linsmaier, EM, and Skoog, F., *Physiol. Plant.*, 18: 151-158, 1965], with the highest frequency (32%) obtained with the wheat-wheatgrass explant. In addition, RM-64 was also the only medium to favor the formation of regenerated plants, with the highest success rate (37.8%) obtained with the F₈ hybrid generation calluses. These studies illustrate the fact that this approach is a viable technique for securing somatic wheat clones. Figures 3; references 15: 1 Russian, 14 Western. [1596-12172]

UDC 547.963.32.07

SYNTHETIC GENES OF PEPTIDE HORMONES. MODEL HUMAN CALCITONIN GENE

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 277, No 5, Aug 84
(manuscript received 23 May 84) pp 1258-1260

GOLOVA, Yu. B., CHERNOV, B. K. and BAYEV, A. A., academician, Institute of
Molecular Biology, USSR Academy of Sciences, Moscow

[Abstract] This work is a part of studies on the creation of strains producing human calcitonin. In the first stage, a model gene was synthesized in order to study its expression in procaryotic and eucaryotic systems. The overall

structure of the synthetic gene is traditional. In the model gene the ATG triplet is replaced by GTT, allowing easy identification. Enzymatic cross linking of the synthetic gene was performed in several stages. The structure of the gene was confirmed by a known method after introduction of a ^{32}P label with high specific activity. References 7: all Russian.
[002-6508]

RECOMBINANT DNA TECHNOLOGY IN ADENOVIRUS STUDIES

Bratislava ACTA VIROLOGICA in Russian Vol 28, No 1, Jan 84
(manuscript received 26 Apr 83; in final form 8 Jul 83) pp 84-92

SZOMOLANYI, E., NASZ, I., Institute of Microbiology, Medical Faculty,
Semmelweis University, Budapest, Hungary

[Abstract] The methods of cloning adenoviruses are outlined and several examples are presented of the use of recombinant clones, with particular attention given to studies of the transforming area of human adenoviruses. The development of methods of molecular biology and recombinant DNA technology has caused a revolution in the study of adenoviruses. Over the past few years our ideas of the transforming segment of the adenovirus virus genome have become significantly deeper. The major mechanisms leading to transformation and oncogenicity are still not understood, however. References 48: all Western.
[050-6508]

UDC 613.646-07

WORK PHYSIOLOGY OF OPERATING PERSONNEL AT POWER PLANTS IN ARID REGIONS

Moscow GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA in Russian No 10,
Oct 84 (manuscript received 14 Nov 83) pp 50-51

MOMMADOV, I. M., GRIGOR'YAN, A. G. and TUPIKOVA, G. A., Institute of Arid Zone
Physiology and Experimental Pathology, Turkmen SSR Academy of Sciences,
Ashkhabad

[Abstract] An assessment was made of the physiological status of power plant personnel working in the arid regions of Central Asia, to determine work factors that may require improvement to enhance performance. The various physiological parameters were observed in July and August when the ambient temperature exceeded 40°C on a cohort of 20-40-year old, clinically healthy, males employed at various branches of the Turkmenglavenergo. The evaluation of the functional status of the different physiological systems demonstrated that heat was the key factor affecting physiological well-being. The combination of heat and performance requirements placed considerable stress on the homeostatic mechanisms, as reflected in greater energy expenditures for task accomplishment and earlier onset of fatigue. Physiological reserves are directed at maintenance of body temperature balance at the expense of muscular performance under the climatic conditions prevalent in the region. To ensure optimum job performance means must be employed to limit exposure to high temperatures and insulated, air-conditioned, rest facilities must be provided, and the workers must be provided with appropriate nutrition, clothing, and vitamin supplements, physical conditioning, and other medical measures that enhance adaptation to arid climates. References 6: all Russian. [1592-12172]

UDC 613.647-07:616.155.1

IN VITRO EFFECTS OF LOW-FREQUENCY ACOUSTIC SIGNALS ON ERYTHROCYTE MEMBRANE

Moscow GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYE in Russian No 10,
Oct 84 (manuscript received 12 Dec 83) pp 48-49

KOLMAKOV, V. N., SVIDOVYY, V. I. and SHLEYKIN, A. G., Sanitary-Hygiene Medical
Institute, Leningrad

[Abstract] Erythrocyte suspensions were irradiated with low-frequency acoustic signals of varying intensity to evaluate the erythrocyte membrane as a suitable

indicator of sound effects. Assessment of membrane catalase activity showed that the effects were highly variable and that catalase could not be used as an indicator of membrane status. However, the ratio of labile to total RBC membrane cholesterol provided useful information. The ratio was unaffected by very low frequencies (2 to 4 Hz), but at higher frequencies (8 Hz, 100-140 dB intensity) showed a significant increase (to 0.29-0.32 from control value of 0.18). This observation indicates that low-frequency vibrations can destabilize the RBC membrane, and that the frequency rather than the intensity is the factor of key importance. Analysis of acetylcholinesterase activity showed that very low-frequency and low-intensity sound (2 Hz, 90 or 100 dB) enhanced activity, while both higher frequencies and intensities (4 Hz at 100 or 125 dB; 8 Hz at 100 or 140 dB) depressed it. Sound stimuli, therefore, have been shown to affect in vitro the state of the erythrocyte membrane; the degree of damage can be assessed from the ratio of labile:total cholesterol and acetylcholinesterase activity. References 7: 6 Russian, 1 Western. [1592-12172]

UDC 613.644-07

HEALTH STANDARDS FOR GENERAL VIBRATION

Moscow GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA in Russian No 10, Oct 84 (manuscript received 14 May 84) pp 9-13

SUVOROV, G. A., Institute of Labor Hygiene and Occupational Diseases, USSR Academy of Medical Sciences, Moscow

[Abstract] Theoretical considerations are presented for assessment and health standardization of the various vibrations that may affect human health. Primary effort is directed at work-related vibrations and the potential of vibration sickness arising from various man-machine interactions. The discussion encompasses regulations established by various governmental agencies on allowable vibration levels in different situations in relation to thresholds of perception. An analysis is presented on the different intensities and the physiological and health consequences that they have for workers. The article concludes with the statement that, in the USSR, effective limit values have been established and are being enforced, but are subject to re-evaluation as new scientific data accumulate. Figures 2; references 3: 1 Russian, 2 Western. [1592-12172]

EFFECTS OF OVERALL VIBRATION AND NOISE ON OPERATIONAL PERSONNEL

Moscow GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYE in Russian No 10,
Oct 84 (manuscript received 9 Nov 83) pp 38-39

KAMENSKIY, Yu. N., Institute of Railway Hygiene, Moscow

[Abstract] In order to substantiate recommendations for maximum permissible human exposure to vibration and noise, 10 clinically healthy males, 25-44 years of age, underwent physiological studies to determine the effect of vibration (10 Hz, with 1 m/sec² acceleration) or noise (90 dB), or a combination of both factors. Evaluation of the heart rate, muscular exertion tests, visual stimuli fusion test, coordination, visual tracking, etc., demonstrated that vibration has a more deleterious effect on the neuropsychological status of humans than does noise within the parameters tested. In addition, in the vibration-noise combination, vibration may mask the effects of noise when the latter is limited to 90 dB. However, increasing the noise intensity to 100-110 dB results in a summation of the adverse effects due to noise and vibration. References 6: 3 Russian, 3 Western.
[1592-12172]

IMMUNOLOGY

PRODUCTION OF RICKETTSIOUS SUSPENSION FREE OF HOST TISSUE DNA BY MEANS OF DNAase IN PROCESS OF PURIFICATION

Bratislava ACTA VIROLOGICA in Russian Vol 28, No 1, Jan 84
(manuscript received 1 Oct 82; final text received 2 Mar 83) pp 73-77

OGARKOVA, O. A. and BALAYEVA, N. M., Institute of Epidemiology and Microbiology imeni N. F. Gamaleya, USSR Academy of Medical Sciences, Moscow

[Abstract] The production of Rickettsious DNA is usually performed using Rickettsia purified to remove host tissue. However, another possible approach to isolation of DNA from partially-purified Rickettsious suspension is liberation of these suspensions of host tissue DNA by means of DNAase. This enzyme was used in the intermediate stages of purification of Rickettsious cultures. Rickettsious suspensions obtained by differential centrifugation and trypsinization were resuspended in 9 volumes of DNAase solution in tris-HCl buffer, pH 7.4-7.5, in the presence of 0.005 mol/l $MgCl_2$, exposure 30 minutes at room temperature with periodic agitation. DNAase concentrations of 100, 50 and 25 $\mu g/ml$ were used. The concentrations of 100 and 50 $\mu g/ml$ yielded significant clarification of the suspensions and a great increase in viscosity. Microscopy revealed but a few Rickettsia. Decreasing the concentration to 25 $\mu g/ml$ yielded a large number of typical Rickettsia. The results showed that DNAase can be used to isolate Rickettsious DNA from post-DNA after Rickettsia are grown in chick embryos. Treatment of partially purified Rickettsious suspensions with DNAase in the proper concentration yields DNA preparations corresponding fully in their physical-chemical characteristics to Rickettsious DNA. Rickettsious DNA was also isolated from yolk tissue precipitates obtained during the course of purification of Rickettsia and usually discarded. Figures 2; references 13: 2 Russian, 11 Western.
[050-6508]

IMMUNOCHEMICAL ANALYSIS OF OLIGOSACCHARIDE FRAGMENTS OF O-SPECIFIC SHIGELLA FLEXNERI POLYSACCHARIDES

Moscow BIOORGANICHESKAYA KHIMIYA in Russian Vol 10, No 10, Oct 84
(manuscript received 18 May 84) pp 1421-1422

YANKINA, N. F., GOMTSYAN*, A. R. and BAKINOVSKIY*, L. V., Moscow Scientific Research Institute of Vaccines and Sera imeni I. I. Mechnikov; *Institute of Organic Chemistry imeni N. D. Zelinskiy, USSR Academy of Sciences, Moscow

[Abstract] Passive hemagglutination was used to study the epitopes of 7,8 and V O-factors of Sh. flexneri polysaccharides. In terms of increasing inhibitory activity with respect to 7,8 antisera, the tested carbohydrates ranked as follows: $\text{Glc}\alpha 1-3\text{Rha}\alpha 1-\text{OMe} < \text{Glc}\alpha 1-3\text{Rha}\alpha 1-2\text{Rha}\alpha 1-\text{OMe} \approx \text{GlcNAc}\beta 1-2(\text{Glc}\alpha 1-3)\text{Rha}\alpha 1-\text{OMe} < \text{GlcNAc}\beta 1-2(\text{Glc}\alpha 1-3)\text{Rha}\alpha 1-2\text{Rha}\alpha 1-\text{OMe}$. These observations indicate that the 7,8 epitope is a trisaccharide at a minimum. Moderate anti-V activity was exhibited only by $\text{Rha} 1-2(\text{Glc} 1-3)\text{Rha} 1-\text{OMe}$. References 8: 2 Russian, 6 Western.
[1588-12172]

EFFECTS OF LASER IRRADIATION ON INFLAMMATION AND DYSTROPHIC CHANGES IN PERIODONTIUM AND FIBROBLAST BIOSYNTHETIC ACTIVITY

Minsk ZDRAVOOKHRANENIYE BELORUSSII in Russian No 10, Oct 84
(manuscript received 18 Nov 83) pp 35-38

ORDA, V. N., PROKHONCHUKOV, A. A., SOSNIN, G. P., MOSTOVNIKOV, V. A.,
ASTAPENKO, Ya. P., KHOKHLOV, V. I. and LOBAZOV, A. F., Chair of Therapeutic
Stomatology, Minsk Medical Institutes; Laser Systems Instruments Laboratory,
Institute of Physics, Belorussian SSR Academy of Sciences; Central Scientific
Research Institute of Stomatology

[Abstract] Experimental and clinical studies were conducted with blue (helium-cadmium, 441.6 nm) and red (helium-neon, 632.8 nm) lasers to determine their optimum biosynthetic effects and therapeutic usefulness in periodontitis. Tissue culture studies with human embryonic fibroblasts showed that optimum stimulation of DNA and RNA was obtained by combined irradiation: blue laser (0.5-10 min, 100 mW/cm²) followed in 10-15 min by red laser (0.5-10 min, 100 mW/cm²). On the basis of these findings, similar parameters were employed in the management of 122 patients with catarrhal gingivitis, periodontitis and dystrophic changes in the periodontium. The patients were initially treated with the blue laser (2 min, 100 mW/cm²), followed in 10 min by red laser irradiation (2 min, 100 mW/cm²). The highest incidence of excellent clinical results were obtained in the group managed by combined irradiation + standard therapy (81.5%), followed by the group on combined irradiation only (65.5%). The clinical outcome was less impressive in patients managed only with the blue laser (50.0% excellent), red laser only (52.4% excellent), or standard therapy without laser irradiation (40% excellent). A follow-up examination 6-9 months post-treatment showed that the most persistent improvements applied to groups treated with combined irradiation. References 7: all Russian.
[094-12172]

EFFECTS OF PRESOWING LASER IRRADIATION OF BARLEY SEEDS ON FUNGAL INFECTIONS

Leningrad MIKOLOGIYA FITOPATOLOGIYA in Russian Vol 18, No 4, Jul-Aug 84
(manuscript received 12 May 82) pp 312-316

BEL'SKIY, A. I. and MAZULENKO, N. N., Sumy Branch, Kharkov Agricultural
Institute imeni V. V. Dokuchayev

[Abstract] Laser irradiation of barley seeds before planting has been employed for 5 years in the Sumy Oblast of Ukraine with considerable effect in lowering subsequent infection of the plants with various fungal species. Such pretreatment of the seeds has been particularly effective in controlling or eliminating losses due to *Ustilago hordei*, *Helminthosporium gramineum*, *H. sativum*, and *Fusarium* sp. Extensive studies conducted at "Shlyakh do Komunizmu" collective farm, beginning in 1977, have shown the effectiveness of L'vov-1 laser (632.8 nm, 25 mW) in this respect. Such pretreatment has been shown to stimulate germination and growth and, by diminishing losses due to fungal infections, increased the harvest by 18-40%. References 9: all Russian. [088-12172]

SLIT LAMP WITH LASER RETINOMETER ATTACHMENT

Odessa OPTAL'MOLOGICHESKIY ZHURNAL in Russian No 5, 1984 (manuscript received 27 Jan 83) pp 281-283

SAPRYKIN, P. I., doctor of medical sciences, SUMAROKOVA, Ye. S., senior scientific associate, RESHNIKOVA, L. B., physician, and IZOTOVA, V. F. and SHUBOCHKIN, L. P., engineers, Chair of Eye Diseases, Order of the Red Banner of Labor Saratov Medical Institute

[Abstract] A slit lamp with laser retinometer attachment was used in the examination for visual acuity in 571 patients (1141 eyes) with various ophthalmic conditions. The patients ranged in age from 5 to 79 years. The technique was found suitable in the case of patients with refractive anomalies, eye defects, and retinal diseases. Such examinations had prognostic usefulness for surgical and conservative management. This approach, however, was inapplicable in cases of mature senile cataracts, dense trauma-induced cataracts, and in situations with complete opacity of the cornea. References 13: 7 Russian, 6 Western. [067-12172]

MEDICINE

ADVANCES IN TREATMENT OF ENDOGENOUS AND EXOGENOUS INTOXICATIONS

Moscow PRAVDA in Russian 12 Oct 84 p 6

LOPUKHIN, Yu., academician, USSR Academy of Medical Sciences, director of Scientific Research Institute of Physico-Chemical Medicine

[Abstract] Advances in methods of treating endogenous and exogenous intoxications are discussed. Study of new methods of purifying the human organism includes attempt to reproduce the mechanism of functioning of the liver. It has been found that it is possible to simulate liver function with the aid of electrochemical oxidation and to develop devices which convert water-insoluble toxic compounds into soluble compounds which are then excreted from the organism. This approach, which may become important in treating acute poisonings, has been called "efferent" therapy, since it removes substances from the body. Further development of this branch of medicine is underway at the Scientific Research Institute of Physico-chemical Medicine. Major departments of the 2nd Moscow Medical Institute are working in facilities of the Institute of Physico-chemical Medicine under the supervision of eminent scientists: Active Member of the USSR Academy of Medical Sciences, R. Petrov, Corresponding Member of the USSR Academy of Sciences, Yu. Vladimirov, and Professor A. Archakov. Studies are underway to develop use of efferent medicine in treating auto-immune diseases, allergies and some blood vessel injuries. Studies aimed at detection of cancer cells and removal of them from the body may increase the effectiveness of chemotherapy and permit reduction of dosages. Other possible applications of efferent therapy include treatment of diseases affecting the immune system, cases of poisoning, some forms of bronchial asthma, psoriasis, many liver diseases, peritonitis and sepsis.

[1567-2791]

UDC 616-001.34-085.355

ENZYME THERAPY IN VIBRATION-INDUCED IMMUNE CHANGES

Moscow GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA in Russian No 10, Oct 84 (manuscript received 6 Dec 83) pp 43-45

PROKOPENKO, L. G., CHALYY, G. A. and YUDINA, L. Ye., Medical Institute, Kursk

[Abstract] Immunocyte function was evaluated in (CBA x C57BL) F_1 mice subjected to long-term vibration stress (50 Hz, 0.5 mm amplitude, 3 h/day for 75

days), in order to assess the effects of enzyme therapy. Vibration depressed splenic antibody- and rosette-forming cells in response to SRBC immunization in the experimental mice, while thymocytes and splenocytes from such donors were found to be immunosuppressive in control syngeneic recipients challenged with SRBC (in terms in splenic antibody- and rosette-forming cells). Treatment of the animals undergoing vibration with trypsin (0.01 mg/10 g/day for 7 or 14 days, last i.m. injection given on last day of vibration), lysozyme (0.02 mg/ 10 g/day, i. m., for 7 or 14 days), or a combination of both enzymes improved splenic immune function. Lysozyme alone was more effective than trypsin in increasing the counts of splenic antibody- and rosette-forming cells in response to SRBC challenge, and the combined treatment further potentiated the immune response. In addition, both enzymes were equally effective in diminishing the immunosuppressive effects of donor thymocytes and splenocytes in recipient mice, with combined treatment showing even greater effectiveness in this respect. These observations suggest that human trials should be undertaken with individuals subjected to vibrations to study the effects of trypsin and lysozyme on their immune function.
[1592-12172]

UDC 616-057:622]-02:613.644

MANAGEMENT OF VIBRATION SICKNESS IN COAL MINERS BY HYPERBARIC OXYGENATION

Moscow GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA in Russian No 10,
Oct 84 (manuscript received 23 Mar 83) pp 41-42

SOBOLEVA, N. P., Medical Institute imeni M. Gorky, Donetsk

[Abstract] Clinical trials were conducted with hyperbaric oxygenation (0.3-0.7 atm, 30-40 min/day, 10-12 days) in the management of vibration sickness in 30 coal miners, 42-47 years of age. Assessment of the results on the basis of symptomatology and objective laboratory criteria (tetrapolar finger rheography, occlusion plethysmography) demonstrated marked improvements in the treated subjects. Headaches disappeared or diminished in intensity, irritability, and fatigability became less pronounced, sleep improved, and the emotional status of the workers provided additional confirmation of the salubrious effects. Among the more pronounced objective findings were the increase in the filling volume and in the blood flow of the peripheral vasculature, and a three-fold decrease in peripheral vascular resistance (from 97 ± 18.2 mm/ml/100 g/min in untreated controls, to 29.0 ± 6.4 mm/ml/100 g/min in the treated subjects). On the basis of these observations, hyperbaric oxygenation can be recommended as a therapeutic modality in the management of vibration sickness. References 5: all Russian.
[1592-12172]

COMPARATIVE ASSESSMENT OF DIFFERENT TREATMENT MODALITIES IN MINERS WITH VIBRATION- AND NOISE-INDUCED DISEASE

Moscow GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA in Russian No 10, Oct 84 (manuscript received 31 Jan 84) pp 16-19

VEL'SKAYA, M. L., NEKHOROSHEVA, M. A., KONOVALOVA, S. I., KUKHTINA, G. V., GONCHAR, I. G., TARENT'YEVA, D. P., GRISHCHENKO, L. A., SOBOLEVA, N. P., KHARITONOV, S. A. and PRIKLONSKIY, I. V., Institute of Labor Hygiene and Occupational Diseases; Oblast Hospital of Occupational Diseases; Medical Institute imeni A. M. Gorky, Donetsk

[Abstract] A group of 71 miners with vibration sickness and noise-induced pathology were managed either by standard methods, or in combination with acupuncture and/or hyperbaric oxygenation for a comparative assessment of the effectiveness of the different therapeutic approaches. Analysis of subjective factors as well as standard physiological parameters (EKG, rheoencephalography, peripheral rheography, EEG, neuropsychological tests) demonstrated that both acupuncture and hyperbaric oxygenation were effective modalities in the majority of the subjects. Nevertheless, the lack of improvement in certain criteria, or even what could be regarded as adverse sequelae, suggest that the use of hyperbaric oxygenation in the management of such disorders be approached with considerable care. References 8: all Russian.

[1592-12172]

MANAGEMENT OF MICROCIRCULATORY DISORDERS IN VIBRATION SICKNESS

Moscow GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA in Russian No 10, Oct 84 (manuscript received 27 Jan 84) pp 19-22

LOSEVA, M. I., SUKHAREVSKAYA, T. M., PAKHOMONOVA, A. M., SUTORMIN, V. A. and DIKKER, V. Ye., Second Chair of Internal Diseases, Pediatric Faculty, Novosibirsk Medical Institute

[Abstract] Addition of heparin or venoruton to standard management of vibration sickness was tested on 116 patients on the basis of autocoagulation test, platelet aggregation, capillary permeability, arteriovenous oxygen balance, and oxygen utilization. Standard therapeutic measures commonly employed in the treatment of vibration-induced microcirculatory disturbances yielded improvements of 3-4 months duration. However, incorporation of heparin into the therapeutic regimen (20,000 U/day parenterally, subsequently reduced to 5000 U and hand massage with heparin paste, or 10,000 U/day and subsequent massage, both approaches applied for an average of 3 weeks) or venoruton (5 ml i.m. for 5 days, followed by 1 capsule (300 mg) b.i.d. for

1 week and subsequent hand massage with veoruton paste) resulted in improvements that persisted for 6 months. The long-term clinical experience with both preparations suggests that they should be more widely employed in the prevention of recurrence of micro-circulatory disorders, as well as during exacerbation in vibration sickness. Referenes 5: 3 Russian, 2 Western.
[1592-12172]

TSELIAZA AGAINST THROMBI

Moscow MEDITSINSKAYA GAZETA in Russian 21 Nov 84 p 4

SVERKUNOVA, O.

[Abstract] A novel thrombolytic agent--tseliazia [sic]--has been prepared and tested for clinical effectiveness at the Belorussian Scientific Research Institute of Epidemiology and Microbiology. An interview with the director V. I. Votyakov, who is also an academician of the USSR Academy of Medical Sciences, revealed that tseliazia is a modified preparation of streptokinase derived from group C streptococci. Active in the preparation of this new drug were doctors of medical sciences P. G. Rytik and A. N. Savchenko, candidates of science V. N. Nikandrov, L. A. Polatina, V. M. Tkach, G. S. Davydova, V. I. Boyko, A. I. Kuzina, and many others. In addition, considerable assistance was rendered by A. A. Totolyan, D. A. Natradze, T. A. Sulling, V. P. Torchilin and I. I. Protas, among others. Selective delivery of tseliazia is attained by means of guided catheters, which reduced the number of units necessary for therapeutic effectiveness to 500,000 IU, from 1,500,000 to 2,000,000 IU necessary on systamic administration. In cases of myocardial infarction, for example, resolution of the clot takes 20-90 min, pointing to the effectiveness of this agent if administered within 4-6 hrs of an attack to avoid ischemic myocardial damage.
[1629-12172]

USE OF COSMETIC PSYCHOTHERAPY TO TREAT WOMEN ALCOHOLICS

Moscow TRUD in Russian 4 Oct 84 p 3

VOSTRUKHIN, V.

[Abstract] A method called "cosmetic psychotherapy" developed by specialists of the Moscow Medical Stomatological Institute imeni N. A. Semashko and used to treat women alcoholics and prevent relapses is described and discussed. The method supplements procedures for correcting physical aspects of alcoholism with cosmetic procedures to restore a women's positive self-image after improvement of her physical appearance and thus restore her confidence in herself as a woman. Some case histories are presented. This method has been introduced at the 2nd Narcological Dispensary of Sverdlovsk Rayon as an outpatient procedure. Consultation with Sverdlovsk women workers concerning this procedure is being provided.
[1568-2791]

BLOOD-PROCESSING CONTAINERS AND STRESS-MODELING RESEARCH DESCRIBED

Moscow MEDITSINSKAYA GAZETA in Russian 5 Oct 84 p 4

KOKURINA, Ye.

[Abstract] The article provides information on developments which were featured recently in theme exhibitions at the "Public Health" pavilion of the USSR Exhibition of National Economic Achievements (VDNKH SSSR). Two of the article's three sections deal with polymer containers which were developed for processing donor blood, and with research work entitled "Methods of Modeling Emotional Stress".

I. M. Gurtovoy, a therapist at the blood transfusion station of the Central Scientific Research Institute of Hematology and Blood Transfusion and head of the equipment commission of the institute's scientific-technical council, received a silver medal of VDNKH SSSR for the development and introduction of polymer containers. Gurtovoy is a graduate of the Naval [sic] Medical Academy. Over a period of almost 25 years, he held the positions of ship-board physician and subsequently head of the therapeutic department of the Sevastopol' Military Hospital. He defended a candidate dissertation on problems of hematology. The polymer containers, which are called the "Kompoplast" type, are intended for accelerating the separation of donor blood in any conditions. Among other participants in their development were Ye. M. Makarova, chief physician of the blood transfusion station and a Meritorious Physician of the USSR, and personnel of the All-Union Scientific Research Institute of Medical Polymers and the "Sintez" medical-preparations and products complex in Kurgan.

Professor F. P. Vedyayev, head of the Khar'kov Medical Institute's chair of normal physiology, and other personnel of this chair are credited with the development of the stress modeling methods. Vedyayev's group was awarded a bronze medal of VDNKH SSSR for the work. The effects of various stresses on a number of human body systems were studied and measures for preventing stresses were proposed. Vedyayev defended a candidate dissertation at the USSR Academy of Medical Sciences' Scientific Research Institute of Experimental Medicine in Leningrad.

FTD/SNAP

CSO: 1840/054

STUDIES ON MOLDS DAMAGING OPTICAL DEVICES

Leningrad VESTNIK LENINGRADSKOGO UNIVERSITETA: BIOLOGIYA in Russian No 15, Issue 3, Aug 84 (manuscript received 25 Jan 83) pp 42-47

KOVALEVA, Ye. V., RODIONOVA, M. S. and CHEREPANOVA, N. P.

[Abstract] Extensive laboratory studies were conducted to determine and identify molds that pose a special hazard to optical glass. Under the conditions of a tropical climate (BATUMI, Crimea), ten species belonging to the Deuteromycete and Zygomycete classes were found to be particularly destructive. Metabolic and cultural studies on these molds and 22 other species often isolated from optical glass, demonstrated that long-term culture can modify their morphological and physiological characteristics. All of them were capable of assimilating both organic and inorganic nitrogen, and grew well on mono-, di-, and polysaccharides. Optimum conditions for growth on optical glass consisted of a temperature of $29 \pm 2^\circ\text{C}$ and a relative humidity of at least 90%. Such studies also led to the identification of *Rhizopus nigricans*, *Aspergillus niger*, and *Acremonium butyri* as being particularly aggressive with respect to optical glass. Effective protection to glass optics was offered by letilan [sic] fibers, which represents material impregnated with beta-(5-nitrofuryl-2)-acrolein. Figures 1; references 18: 16 Russian, 2 Western.

[095-12172]

MOLECULAR STRUCTURE OF O-SPECIFIC POLYSACCHARIDE OF SHIGELLA DYSENTERIAE
TYPE-2

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 278, No 5, Oct 84
(manuscript received 30 Dec 83) pp 1133-1137

NIKITIN, I. V., GENIN, A. L., VAYNSHTEYN, E. F., KUSHNEREV, M. Ya. and
KOCHETKOV, N. K., academician, Institute of Organic Chemistry imeni N. D.
Zelinskiy, USSR Academy of Sciences; Institute of Chemical Physics, USSR
Academy of Sciences, Moscow

[Abstract] X-ray analysis was employed in conformational studies on the O-specific polysaccharide of Shigella dysenteriae, type-2, subjected to dehydration (from 50 to 10%) in a polysaccharide-water-sodium acetate system. Starting preparation (50% H₂O) was obtained by slow evaporation of the diluted system, and subsequent dehydration was achieved by storage of the crystalline samples in air. Evaluation of the conformational parameters demonstrated that with dehydration the molecule underwent elongation with an increase in the period of identity from 37.2 to 43.2 Å. The torsion angles characterizing the geometry of the main polysaccharide chain were close to 180°, indicating that the C-C and C-O bonds of adjacent monosaccharide moieties were located in the same plane, forming a C₂-C₁-O_n-C_n-C_{n+1} type of transoidal zigzag. The resultant spatial disposition of the monosaccharide moieties [A-B-C-D]_n is most convenient for close packing, since it allows for a high degree of stretch and an energetic minimum due to lack of strong interactions between atoms that are not bound by valence bonds. These observations indicate that only heteropolysaccharides can function as effective O-antigens, since homopolymers would lack the conformational heterogeneity required for bio- and stereospecific interaction with antibodies. Figures 2; references 12: 6 Russian, 6 Western.
[1596-12172]

X-RAY ANALYSIS OF ANTIVIRAL AGENT (S)-9-(2,3-DIHYDROXYPROPYL) ADENINE

Moscow BIOORGANICHESKAYA KHIMIYA in Russian Vol 10, No 10, Oct 84
(manuscript received 10 Feb 84) pp 1414-1420

GURSKAYA, G. V., DZHAVADOVA, G. M., VASIL'YEV, D. G., TSILEVICH, T. L.,
ZAVGORODNIY, S. G. and FLORENT'YEV, V. L., Institute of Molecular Biology,
USSR Academy of Sciences, Moscow

[Abstract] X-ray analysis was conducted on the molecular and crystalline structure of the antiviral agent (S)-9-(2,3-dihydroxypropyl)adenine (DHPA), demonstrating crystalline space group $P2_1$ and elementary cell parameters of a 5.546 (1), b 8.381 (1) and c 10.119 (1) Å, β 91.979 (9)°, and Z2. Structural atomic coordinates were calculated by the direct method and refined by a full-matrix method of least squares down to $R = 4.2\%$. All of the non-hydrogen atoms were ascribed to two planes at an angle of 54.3°. The first plane was formed by the atoms of the purine ring and atoms N(6) and C(1'), and the second plane by atoms C(2'), C(3'), O(2') and O(3'). The crystalline conformation of DHPA was compared with conformation in solution, the data indicating that the anti-conformation constitutes the most probable state in solution. It may be that the high biological activity of DHPA is due to its conformational variability and lability, which allows it to accommodate itself to the geometry of transition states of enzymatic reactions with low energy expenditures. Figures 2; references 15: 5 Russian, 10 Western.
[1588-12172]

NONIONIZING ELECTROMAGNETIC RADIATION EFFECTS

UDC 591.1

COMBINED EFFECTS OF HETEROGENOUS 2,4 GHz MICROWAVE AND GAMMA-IRRADIATION ON BLOOD-BRAIN BARRIER IN RAT

Moscow IZVESTIYA AKADEMII NAUK SSSR. SERIYA BIOLOGICHESKAYA In Russian No 5, Sep-Oct 84 (manuscript received 1 Feb 83) pp 795-797

USHAKOV, I. B. and ZUYEV, V. G.

[Abstract] Two-factor planning and analysis were employed in the evaluation of the effects of head-to-tail microwave irradiation of Wistar rats (1:1:1:1 dose distribution, 2.4 GHz, 300 mW/cm², 2 min exposure) alone and in combination with gamma-irradiation of the head (Co-60, 1000 R, 5 min after microwave irradiation). Determination of blood-brain barrier on the basis of permeability to acid fuchsin showed that microwave irradiation had a variable effect, depending on the area of irradiation. Microwave irradiation alone or gamma-irradiation generally tended to decrease the permeability of the barrier. However, a combination of microwave irradiation of the head with gamma-irradiation resulted in a decrease in permeability, while the combination of microwave irradiation of the caudal area with gamma-irradiation of the head always enhanced permeability to acid fuchsin. It appears that microwave irradiation of the caudal area established reflex predisposition to the subsequent gamma-effects. Referenes 11: 7 Russian, 4 Western.
[080-12172]

UDC 616.5-006.81-085.846-089.844

FREE SKIN FLAPS IN COMBINATION THERAPY OF CUTANEOUS MELANOMA WITH SHF HYPERTHERMIA

Minsk ZDRAVOOKHRANENIYE BELORUSSII in Russian No 10, Oct 84 (manuscript received 12 Apr 84) pp 47-49

ZALUTSKIY, I. V., ZHAVRID, E. A. and FRADKIN, S. Z., Department of Special Therapeutic Methods, Belorussian Scientific Research Institute of Oncology and Medical Radiology

[Abstract] A review is presented of 61 male and female patients with cutaneous melanoma treated by a combination of SHF-induced hyperthermia and radiation,

and resultant free skin flap survival. The site of lesion was treated with 2450, 915 or 460 MHz SHF to give a local hyperthermia of 42-43°C for 120 min, and of regional lymph nodes of 41-42°C for 60 min if indicated, followed immediately by radiotherapy to the lesion (3-5Gy/dose, 30-60 Gy total). One to three days after radiotherapy the tumors were excised with a 4-5 cm margin, and free skin flaps autotransplanted. In some cases additional radiotherapy was applied to the site. Complete survival of the graft was obtained in 26 of the patients, and partial in 32. In three patients (with tumors on soles or Achilles tendon) the skin flaps were rejected. The data indicate that considerable refinements will have to be introduced into the management of cutaneous melanoma to improve graft survival, particularly when the surgery follows microwave/radiotherapy combination. References 14: 9 Russian, 5 Western.
[094-12172]

UDC 577.37:591.044.2.577.352.5

STUDIES ON RAPID SODIUM CHANNEL INACTIVATION BY SEA ANEMONE
(RADIANTUS MACRODACTILYS) NEUROTOXIN AND VARIOUS CHEMICAL REAGENTS

Kiev FIZIOLOGICHESKIY ZHURNAL in Russian Vol 30, No 5, Sep-Oct 84
(manuscript received 6 Mar 83) pp 571-579

SOROKINA, Z. A., CHIZHMAKOV, I. V., YELIAKOV, G. B., KOZLOVSKAYA, E. P. and
VOZHZHOVA, Ye. V., Institute of Physiology imeni A. A. Bogomolets, Ukrainian
SSR Academy of Sciences, Kiev; Pacific Ocean Institute of Bioorganic Chemistry,
Vladivostok

[Abstract] Intracellular perfusion and voltage-clamp techniques were employed in studies on the sodium channel of spinal ganglia of 14-21 day-old rats subjected to fraction three (RTX-III) of the neurotoxin isolated from the sea anemone *Radiantus macrodactylus*. In similarity to the effects seen with neurotoxins isolated from other sea anemone species, RTX-III hindered the inactivation of rapid inward sodium currents by TTX [sic] and transformed a fraction of the sodium channels into an active form, with activation processes and inward peak currents remaining unaltered. Analysis of neurotoxin-channel interaction data by the Langmuir isotherm yielded a $K_d = \pm 2.3 \times 10^{-8}$ moles L^{-1} at the holding potential of -100 mV. Combination studies on the effects of RTX-III and agents that act on the internal side of the membrane, Zn^{++} and SH-group blockers (p-chloromercuribenzoate, N-ethylmaleimide), and that block slow channels, demonstrated additive consequences. These facts indicate that the effects of RTX-III lead to heterogeneous changes in channels in terms of conformation, and hence the additive effects of SH-group blockers. Figures 4; references 29: 12 Russian, 17 Western.
[106-12172]

HYGIENIC ASSESSMENT AND IMPROVEMENTS IN WORKING CONDITIONS IN MANUFACTURE OF AMPICILLIN TRIHYDRATE

Moscow GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA in Russian No 10,
Oct 84 pp 34-36

KARPENKO, L. Z., Kurgan Municipal Sanitary Epidemiologic Station

[Abstract] A hygienic assessment was conducted on the working situation at a plant involved in the production of ampicillin trihydrate, which demonstrated that the greatest single health hazard consisted of the ampicillin aerosol. In addition to the faulty equipment and other inadequate technological procedures which resulted in the leaking of ampicillin into the air, the workers and laboratory personnel were not provided with proper protective clothing. As a result, the single most frequent product-related pathology was allergic sensitization, with the time span from initial hypersensitization to frank bronchial asthma lasting one to one-and-a-half years. Recommended measures for improvement of the working conditions included both suggestions for upgrading the equipment to prevent aerosol formation, and mandatory use of protective clothing, gloves, goggles, etc., to prevent contact with ampicillin trihydrate.

[1592-12172]

MONOCLONAL ANTIBODIES TO NERVE TISSUE GROWTH FACTOR FROM VIPERA LEBETINA VENOM

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 277, No 5, Aug 84
(manuscript received 9 Feb 84) pp 1267-1269

SAARMA, M. Yu., NEUMAN, T. E., TAL'PSEP, T. E., TOOTS, I. E., SIYGUR, E. L. and SIYGUR, Yu. R., Institute of Chemical and Biological Physics, Estonian Academy of Sciences, Talin

[Abstract] Data are presented on the creation of mouse-cell-like hybridomas which secrete monoclonal antibodies against Vipera lebetina nerve tissue growth factor. Among the monoclonal antibodies, some are found which inhibit the biological activity of the growth factor, as well as antibodies interacting with the growth factor from the mouse saliva gland, the venom of the common viper and of the central Asian cobra. Nerve growth tissue factor has been found in the venoms of a number of vipers. The nerve tissue growth factor obtained by electrophoresis was used to immunize BALB/c mice, yielding antibodies to V. lebetina nerve tissue growth factor. The influence of monoclonal antibodies on the growth factor-induced growth of neurites at neurons of the sympathetic ganglia in chick embryos was also studied. Of 47 hybridoma clones studied, only 8 produced antibodies which inhibited the biological activity of the growth factor, probably by inhibiting bonding of the growth factor with receptors on the cell surface. Figures 2; references 15; all Western.

[002-6508]

CATECHOLAMINE LEVELS AND ADENYLATE CYCLASE AND PHOSPHODIESTERASE ACTIVITIES OF MYOCARDIOCYTE SARCOLEMMAS IN HYPOKINESIA AND EXPERIMENTAL INFORMATIONAL NEUROSIS

Leningrad FIZIOLOGICHESKIY ZHURNAL SSSR IMENI I. M. SECHENOV in Russian
Vol 70, No 8, Aug 84 (manuscript received 27 Feb 84) pp 1214-1220

KHANASHVILI, M. M., KARSANOV, N. V., MINEYEVA, I. I., EDISHERASHVILI, KARTVELISHVILI, R. G. and SUKNIDZE, Ts. G., Institute of Physiology imeni I. S. Beritashvili, Georgian SSR Academy of Sciences; Republic Scientific Research Center of Medical Biophysics, Georgian SSR Ministry of Health, Tbilisi

[Abstract] In order to better understand the enzymatic and neurohumoral mechanisms of diminished myocardial contractility in informational neurosis, catecholamine levels and adenylate cyclase and phosphodiesterase (AC; PDE) activities were determined in canine myocardium following limited motor activity, and in information neurosis. Motor limitation, in conjunction with conditioned food reflex, resulted in marked depression of epinephrine and norepinephrine, and a less pronounced decrease in dopamine. However, baseline activity of AC and its susceptibility to NaF, Ca, and catecholamines was not altered. PDE also remained unaffected and its susceptibility to inhibition by high Ca concentration was not altered. Induction of information neurosis led to a 5-fold increase in norepinephrine over the hypokinetic animals and a 2.5-fold over normal control animals. Epinephrine levels increased slightly but remained below baseline levels, and DOPA was not affected. Dopamine showed a marked elevation in comparison with the hypokinetic animals. AC activity was not affected by informational neurosis, but its susceptibility to NaF diminished, while the effects of high CA concentrations were not altered. In addition, AC susceptibility to norepinephrine decreased 1.6-fold in comparison with the hypokinetic group and normal control group, while its susceptibility to epinephrine was insignificantly diminished. The activity of PDE in animals with informational neurosis increased 1.3-fold, and its susceptibility to inhibition by high Ca concentrations decreased markedly. These observations were interpreted to indicate that with the onset of informational neurosis AC becomes less sensitive to stimulation by norepinephrine, due to a change in the catalytic subunit of the enzyme. Such a change should lead to a decrease in the levels of cAMP and cAMP-dependent phosphorylation in the cardiomyocytes. The latter factor may be responsible for diminished Ca transport and eventually diminished cardiac contractility. References 25: 12 Russian, 13 Western.
[066-12172]

NEUROCHEMICAL CORRELATES OF THERAPEUTIC ELECTRICAL STIMULATION

Leningrad FIZIOLOGICHESKIY ZHURNAL SSSR IMENI I. M. SECHENOV in Russian Vol 70, No 8, Aug 84 (manuscript received 20 Feb 84) pp 1092-1099

BEKHTEREVA, N. P., DAMBINOVA, S. A., GURCHIN, F. A., SMIRNOV, V. M., KOROL'KOV, A. V. and PIVOVAROV, A. M., Department of Human Neurophysiology, Scientific Research Institute of Experimental Medicine, USSR Academy of Medical Sciences, Leningrad

[Abstract] Three patients with Parkinsonism were subjects of a study on the neurochemical correlates of electrical subcortical stimulation. Implanted golden electrodes were used to stimulate the globus pallidus, the reticular thalamic nucleus and the dorsomedial nucleus, and to institute microlysis for therapeutic purposes, with analysis of serum and CSF samples for protein and peptide patterns before and after electrostimulation. Electrostimulation resulted in reduction of muscular rigidity and improved mental status. Concomitant neurochemical studies revealed normalization of CSF proteins, and additional low MW (ca. 10,000 daltons) components appeared in the serum. The latter changes were not predicated on alterations in serum proteolytic activity as a result of electrostimulation. Standard protein techniques resulted in the identification of 5-6 new protein factors with a MW of less than 5000 in the CSF after electrostimulation. These factors, in a concentration of 10^{-6} M, were found active in a leech denervated muscle preparation. This observation suggests that electrostimulation of the subcortical structures stimulated formation or release of endogenous bioactive substances. Figures 5; references 18: 12 Russian, 6 Western.
[066-12172]

NEUROPHYSIOLOGICAL CORRELATES OF IDEOMOTOR TENSION IN ATHLETES

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 278, No 5, Oct 84 (manuscript received 11 Jun 84) pp 1263-1264

KOGAN, A. B., YERMAKOV, P. N. and POROSHENKO, A. B., Rostov State University imeni M. A. Suslov, Rostov-on-Don

[Abstract] The neurophysiological correlates of ideomotor stress were studied in 12 athletes, 18-30 years of age, by obtaining monopolar EEG recordings during imagined motor activity. In situations with high ideomotor tension all athletes showed high-amplitude discharges from the frontal leads on the order of 80-350 μ V, with regularity reminiscent of paroxysmal psychomotor activity. The paroxysmal discharges would diminish or even disappear when decisions were made not to carry out a given activity, but reappear on suggestions from a trainer. In subjects with extensive experience with karate,

paroxysmal activity was observed with considerable regularity and a duration of 800-1200 msec. In other subjects with high-amplitude waves, the frequency approached 3-5 Hz with the onset of fatigue, following which the amplitude decreased and a polymorphic pattern set in. In isolated cases the paroxysmal activity was preceded by high-amplitude slow-wave activity. In 10 of the subjects, such paroxysmal activity was noted only in the right frontal lobe, and in 2 individual it was recorded only from the left frontal lobe. In addition, paroxysmal activity was also found to suppress visual evoked potentials. These observations indicate that ideomotor tension in trained athletes is reflected in frontal paroxysmal activity, usually occurring in the right lobe. Figures 1; references 6: 3 Russian, 3 Western.
[1596-12172]

UDC 616-001.34-085.844-036.8

MODULATED SINUSOIDAL CURRENTS IN MANAGEMENT OF VIBRATION SICKNESS

Moscow GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA in Russian No 10, Oct 84 (manuscript received 30 Jan 84) pp 39-41

GERASIMOVA, M. M. and KUPRIYANOVA, T. S., Institute of Labor Hygiene and Occupational Diseases, Gorky

[Abstract] Modulated sinusoidal currents (70 Hz, 75% modulated, 12 min/session, 10-12 sessions) were tested for therapeutic effectiveness on 79 male and female grinders and polishers with evidence of vibration sickness. The patients were monitored both subjectively and objectively (pallesthesiometry, electrothermometry, rheography, nail bed capillaroscopy) and divided into two groups on the basis of whether they were also treated with vitamins B or not. Prior to treatment all subjected showed depressed skin temperature, increased vascular tonus and increased threshold of pallesthesia at 65 and 125 Hz frequencies. Following treatment with the modulated current both groups showed elevation in skin temperature, a decrease in pallesthesia threshold, and diminished vascular tonus in most of the patients. The results were especially satisfactory in the group on vitamin therapy, and indicate that a combination of vitamin B therapy and modulated sinusoidal current is effective in normalizing peripheral vascular status in patients with vibration sickness. References 6: all Russian.
[1592-12172]

EFFECTS OF PARTIAL DEPRIVATION OF SLOW-WAVE SLEEP ON WAKEFULNESS-SLEEP CYCLES

Leningrad FIZIOLOGICHESKIY ZHURNAL SSSR IMENI I. M. SECHENOV in Russian Vol 70, No 8, Aug 84 (manuscript received 31 Jan 84) pp 1142-1148

ONIANI, T. N., CHIDZHAVADZE, E. O. and MAYSURADZE, L. M., Neurobiology Laboratory of the Wakefulness-Sleep Cycle, Institute of Physiology imeni I. S. Beritashvili, Georgian SSR Academy of Sciences, Tbilisi

[Abstract] Electrophysiological studies on cats demonstrated that partial (35 or 55%) deprivation of slow-wave sleep, by the induction of EEG evidence of wakefulness by electrostimulation of brainstem structures, leads to an increase in 'behavioral' sleep and a decrease in paradoxical sleep. The decrease in paradoxical sleep was especially marked if the partial deprivation was due to phases of 'behavioral' wakefulness. In the latter case, the postdeprivation period was not modified by a rebound onset of paradoxical sleep. These observations indicate that the mechanisms, responsible for isolated EEG evidence of wakefulness, function synergistically with the mechanisms of 'behavioral' wakefulness in the formation of the neurohumoral basis of sleep. Figures 5; references 19: 5 Russian, 14 Western. [066-12172]

QUANTITATIVE MEASUREMENT OF HUMAN AUDITORY ACUITY

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 278, No 4, Oct 84 (manuscript received 29 Apr 84) pp 1012-1016

POPOV, V. V. and SUPIN, A. Ya., Institute of Animals Evolutionary Morphology and Ecology imeni A. N. Severtsov, USSR Academy of Sciences, Moscow

[Abstract] Preliminary data are presented on an approach toward the evaluation of human auditory acuity, i.e., the minimum perceived interval between spectral peaks in an auditory signal, using a modulated quasibell signal. Human subjects were tested both under "psychophysiological" and standard (pressing signal buttons) conditions, and yielded comparable results. The method was therefore evaluated as being useful in measuring human auditory acuity, and demonstrated that this parameter characterizes the dependence of threshold contrast on ridge frequency of the signal, or the critical frequency perceived with 100% depth modulation. For the subjects tested, this was determined to be in the range of 20-25 kHz⁻¹, which corresponds to an inter-ridge interval of 50-40 Hz. Figures 3. [1582-12172]

SPECIES DIFFERENCES IN ELECTRICAL ACTIVITY OF INFERIOR COLLICULI IN BATS

Leningrad ZHURNAL EVOLYUTSIONNOY BIOKHIMII I FIZIOLOGII in Russian Vol 20,
No 5, Sep-Oct 84 pp 517-522

ANDREYEVA, N. G., VASIL'YEV, A. G. and VINOGRADOVA, Ye. P., Physiological
Institute imeni A. A. Ukhtomskiy, Leningrad University

[Abstract] Electrophysiological studies were conducted on the synchronization of electrical activity in response to amplitude modulated (AM) signals in the inferior colliculi of the bats *Rhinolopus ferrum-equinum* and *Myotis blythi*. In both species the response to the AM stimuli was most marked at saturation frequencies serving as components of echolocation signals in the 15-150 Hz band. Band isolation analysis showed that in *Rh. ferrum-equinum* enhanced sensitivity was seen in the 35-45 Hz band, which was lacking in *M. blythi*. Since sound signals reflected from the night moth (primary food source for *Rh. ferrum-equinum*) show AM at the frequency of 35-45 Hz, it appears that the central sound processing mechanisms in *Rh. ferrum-equinum* represent an evolutionary adaptation. Figures 5; references 9: 7 Russian, 2 Western. [068-12172]

INTERACTION OF BIOGENIC AMINES WITH OPIATE RECEPTORS OF HIPPOCAMPUS NEURONS IN TISSUE CULTURE

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 277, No 5, Aug 84
(manuscript received 6 Jan 84) pp 1270-1273

GROMOVA, Ye. A., CHUBAKOV, A. R. and SARKISOVA, E. F., Institute of Biological
Physics, USSR Academy of Sciences, Pushchino, Moscow Oblast

[Abstract] Results are presented from analysis of the nature of participation of opiate receptors in the effects of serotonin and noradrenaline on the activity of hippocampus neurons in a tissue culture taken from the brains of 1 to 2 day old rats. Studies were performed on 60 organotypical cultures from the dorsal hippocampus developing at 36°C in covered glasses in rotating tubes. The results showed that administration of serotonin or noradrenaline to the medium surrounding the explantate at the minimally active dose of $2 \cdot 10^{-5}$ M caused a change in recorded electrical activity in either direction. The data showed that blockage of the opiate receptors prevents or reduces the effects of serotonin. Blockage of serotonin receptors reduces the effects of morphine. The combination of these data indicates that the effects of opiates and serotonin are mediated by the same receptors. The effect of noradrenaline was not found to be related to the opiate receptors. This difference in the relationship of serotonin and noradrenaline to the opiate receptors of the hippocampus neurons is a key to the understanding of the specifics of the mechanism of participation of serotonergic and noradrenergic systems of the brain in processes of learning and memory. Figures 3; references 6: 2 Russian, 4 Western. [002-6508]

INFLUENCE OF HYPERTHERMIA ON BODY TEMPERATURE AND CONTENT OF CATECHOLAMINES
IN WHITE RAT HYPOTHALAMUS

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 277, No 5, Aug 84
(manuscript received 5 Nov 83) pp 1274-1275

SULTANOV, F. F., academician, Turkmenian Academy of Sciences, MEZIDOVA, Kh. A. and MANUKHIN, B. N., Institute of Physiology and Experimental Pathology of the Arid Zone, Turkmenian Academy of Sciences, Ashkhabad; Institute of Biology of Development imeni N. K. Kol'tsov, USSR Academy of Sciences, Moscow

[abstract] A study was made of the dynamics of the biogeneous monoamines (noradrenaline, dopamine and serotonin) in the hypothalamus during hyperthermia and for a period of 10 days after hyperthermia. The experiments were performed on male Wistar white rats, placed in a well-ventilated heating chamber for 30 and 60 minutes at a temperature of 45°C. Biogenous monoamines were determined after 30 and 60 minutes of hyperthermia, then after 1, 24, 48 hours, 5 and 10 days following completion of 60 minutes hyperthermia. Rectal temperature was monitored. After 30 minutes of hyperthermia, the hypothalamus undergoes significant changes in terms of its content of noradrenaline, dopamine and serotonin, with a reliable increase in noradrenaline during hyperthermia, followed after 24 hours by a drop to 43% below the level of the control, an increase by 48 hours, then gradual normalization. The dynamics of the content of dopamine are similar to those of noradrenaline. The content of serotonin changes approximately the same way as the catecholamines, although the changes are less severe, never falling below the control. Hyperthermia thus causes long-term changes in the metabolism of biogenous amines in the hypothalamus. Figures 1; references 11: 7 Russian, 4 Western. [002-6508]

USE OF ACUPUNCTURE PRINCIPLES IN DiVo-2 DIAGNOSTIC MACHINE

Moscow MOSKOVSKAYA PRAVDA in Russian 5 Oct 84 p 3

[Abstract] The article provides information on the principles and features of a new complex for diagnosis and producing effects at acupuncture points. This complex, the DiVo-2, was developed by personnel of the Moscow Aviation Institute imeni Ordzhonikidze (MAI) in accordance with an assignment from the Scientific Research Institute of Eye Micro-surgery and the Tuberculosis Scientific Research Institute. A test prototype of the DiVo-2 has been produced at MAI, and an experimental lot of 15-20 instruments is to be produced by the end of this year.

The DiVo-2 is said to include a small instrument with built-in displays, and a sensing device that resembles a felt-tip pen, which are used to measure electrical conductance at biologically active points of the body. The use of operational amplifiers with high input resistance enables the complex to register currents on the order of units of a microampere in body tissues, it is claimed. Precise measurement of potentials is ensured by a noncontact method which MAI engineers developed. Specialists of the institute reportedly foresee the development of future complexes with still higher sensitivity.

With the aid of the DiVo-2, 24 main acupuncture points can be localized in a matter of minutes, it is claimed. Quick diagnoses of the functioning of individual organs are made by producing effects on points on the body's surface which correspond to these organs and measuring the time it takes the patient to sense these effects. They are produced by means of heat pulses or voltage pulses of a special form. Heat pulses are generated by a light-emitting diode which operates in the infrared band. This quick-diagnosis method is said to be painless to the patient. G. M. Antropov, a docent at MAI and design-work director, ca- led the method potentially advantageous for diagnosing the condition of unconscious patients in traumatology stations, for example. He mentioned space medicine as another field in which the DiVo-2 may be successfully employed.

FTD/SNAP

CSO: 1840/054

PUBLIC HEALTH

MEDINFORM AGENDA EXPANSION AS FUNCTION OF INFORMATION EXPLOSION

Moscow MEDITSINSKAYA GAZETA in Russian 26 Oct 84 p 4

[Article by N. Safronova, "Medinform: Today and Tomorrow"]

[Text] The information explosion, as one of the phenomena of scientific and technical progress, has engendered a problem of efficient use of information resources. According to specialists' calculations, from 20 to 80 percent of the constantly growing flow of information sometimes does not reach the "consumer." For this reason powerful national and international information centers have been established in order to find, gather, process and transmit it.

Among world information systems, the authority of the international system of scientific medical information from countries which are members of the Council for Mutual Economic Aid [CEMA], Medinform, is growing.

Medinform's principal purpose is to create a means for integrating an automated medical literature data bank from member countries. It also provides for mutual use of national medical literature resources and service exchange with other international information systems.

The head Medinform organ is the USSR Ministry of Health Scientific Research Institute for Medical and Medical-Technical Information; so-called base organs of the system have been set aside in a number of socialist countries, with tasks that are clearly delimited. The Center for Scientific Information in Medicine and Health in Sofia provides tape recording of bibliographic data. The Central Institute of Medical Information in Budapest has the data bank on medical-biological profile journals. Medical-legal information is centered at the Institute of Scientific Health Information in Bratislava.

The diversity of task planning requires constant coordination of activities; this is the reason for the expanded agenda of the 9th session of the Medinform Council taking place in Moscow. There was discussion of Medinform tasks resulting from decisions of the CEMA committee on scientific-technical collaboration in the health field and the committee of plenipotentiary representatives of countries--members of the International Center for Scientific and Technical Information. Prospects for the development and functioning of the system until 1990 were examined, as well as a number of questions dealing with the transfer of information service to an automated system and the consolidation of cooperation with world information systems.

Delegations from Bulgaria, Hungary, the German Democratic Republic, Poland, the Republic of Cuba, the Soviet Union and Czechoslovakia are participating in the work of the council, as well as responsible workers from the CEMA secretariat, the International Center for Scientific-Technical Information and the USSR Ministry of Health.

12262

CSO: 1840/1595

ADVANCED TRAINING OF PHYSICIANS IN NOVOKUZNETSK

Moscow MEDITSINSKAYA GAZETA in Russian 31 Oct 84 p 3

[Article by G. Birskiy, department head, City Committee of People's Control, Novokuznetsk: "Help Is Needed"]

[Text] In checking the fulfillment by scientific-research and planning institutes in Novokuznetsk (there are 26 of them in the city) of party and state decrees concerning the acceleration of scientific and technical progress in the national economy, the city Committee of People's Control familiarized itself with operation of the Novokuznetsk Institute for the Advanced Training of Physicians.

In this scientific-pedagogical center, the tasks of improving skills of physicians (3500 annually) are being successfully carried out, and serious and effective scientific research work is being done.

The Institute was awarded the Order of Labor Red Banner. A collective such as this is worthy of every kind of support.

Support and help are extremely necessary at this time. In order to improve planning and coordination of research, staff is necessary for the creation of a scientific sector, a department of scientific-medical information and a patient bureau.

An insufficient amount of financing for scientific research makes acquisition of modern equipment and apparatus and reagents difficult. Means for out-of-town work are extremely insufficient--due to the remoteness of the leading scientific centers, associates of many faculties are able to resort to out-of-town work assignments once in 3-4 years.

The most serious problem is the critical condition of the main wing, built a half century ago.

Opening of a new pharmaceutical faculty is pending, for lack of location, although the need for improving skills of the pharmaceutical staff in Altay, Siberia and the Far East is very great.

IMPROVED PERFORMANCE OF MEDICAL SPECIALISTS

Moscow ZDRAVOOKHRANENIYE ROSSIYSKOY FEDERATSII in Russian No 10, Oct 84
(manuscript received 2 Feb 84) pp 10-14

SHARYGIN, S. L. and SHULYAT'YEV, G. F., Kirov

[Abstract2 An analysis was conducted on the distribution, qualifications and performance of medical specialists in 63 rayons in the nonchernozem region of the RSFSR, which encompassed 306 specialists in 11 different specialties. Quality of care was based on the analysis of some 6,000 cases. In the rayons analyzed, 42.5% of the specialists were male, and 57.5% female; the average age for the group was 36.3 years. However, 2.6% of the specialists were in the retirement-age bracket. Certification analysis revealed that 35.3% were certified in their specialty. Of that group, 72.2% had primary certification, 19.5% higher certification, and 8.3% had second certification. However, 49.1% of the specialists with more than 5 years of experience were uncertified. Analysis of the case histories showed that 30.4% of the patients at Central Rayon Hospitals had previously undergone full clinical and diagnostic workups at ambulatory and polyclinical services, whereas only 11.8% admitted to district hospitals had been so processed. Incomplete prehospitization examination had been performed in 30.5% of the patients at the rayon hospitals, and 43.6% of those admitted to uchastok hospitals. In addition, clinical and diagnostic errors were found in 13.4 and 34.3% of the cases, respectively. These shortcomings were largely due to poor organizational structures, lack of quality control and follow-up, inadequate utilization of laboratory diagnosis and function tests, and other factors pointed to lack of clinical and administrative experience. These factors indicate that more care should be accorded to better management of human resources, and in encouraging additional training and certification.

[089-12172]

COMPARATIVE RAPID TEST SYSTEM TO REVEAL CARCINOGENIC AND MUTAGENIC CHEMICAL COMPOUNDS

Moscow IZVESTIYA AKADEMII NAUK SSSR. SERIYA BIOLOGICHESKAYA in Russian No 5, Sep-Oct 84 (manuscript received 27 Apr 81) pp 729-745

ZAKHAROV, I. A., KASINOVA, G. V., KOVAL'TSOVA, S. V. and MARFIN, S. V.,
Leningrad Institute of Nuclear Physics imeni B. P. Konstantinov

[Abstract] A review is presented of the results of the International Program for Evaluation of Rapid Carcinogenicity Test Systems, which dealt with 30 such test systems evaluated in 50 participating countries. The systems tested included mutagenesis in bacterial, yeast, and mammalian cells and drosophila, differential inhibition of repair processes in defective bacteria and yeasts, induction of unscheduled DNA synthesis in mammalian cells, induction of mitotic recombinations in yeasts and of sister chromatid exchanges in mammalian cells, as well as induction of chromosomal abnormalities in mammalian cells and morphological abnormalities in mammalian sperm cells, and cell transformation in tissue culture. In terms of sensitivity, transformation of mammalian cells in tissue culture ranked first, followed by mutagenesis in bacterial and yeast cells. In vivo mammalian and drosophila systems were found to be least sensitive. None of the tests were 100% effective in distinguishing carcinogens from noncarcinogens, with the best tests showing 70% accuracy. For best results, a battery of tests has to be employed, as indicated by the studies on 25 known carcinogens and 17 noncarcinogenic chemicals. Figures 3; references 15: 2 Russian, 13 Western.
[080-12172]

UDC 614.23:614.881

PSYCHOLOGICAL ASPECTS OF PROFESSIONAL ACTIVITY OF PHYSICIANS OF THE SKORAYA POMOSHCH

Moscow ZDRAVOOKHRANENIYE ROSSIYSKOY FEDERATSII in Russian No 9, Sep 84
(manuscript received 27 Dec 83) pp 11-15

VERETENNIKOVA, A. A., Moscow Scientific Research Institute of Emergency Medicine imeni N. V. Sklifosovskiy

[Abstract] Studies were conducted on the psychological factors determining successful performance as an emergency [Skoraya Pomoshch] physician, with the hope that such criteria can be utilized in the selection of successful candidates for that occupation and in assisting others in improving their performance through a better understanding of all the professional ramifications. Specifically, a cohort of 70 male and female emergency physicians were involved in a study involving questionnaires and interviews designed to identify those personality characteristics leading to a successful performance as an

emergency physician. The key factors deemed of the utmost importance in job performance were emotional stability, social consciousness and competence, and operative method of mentation. Secondary factors of importance were identified as mental wellbeing and comfort. These observations point to the importance of mental health and attitude of the emergency physician in the successful performance of their professional responsibilities, and of the importance of personality assessment in the selective process. References 3: all Russian.
[091-12172]

ANNUAL MASS SCREENING IN PREVENTION OF CARDIOVASCULAR MORBIDITY

Moscow SOVETSKOYE ZDRAVOOKHRANENIYE in Russian No 10, Oct 84
(manuscript received 10 Apr 84) pp 3-6

CHAZOV, Ye. I., OGANOV, R. G. and GLAZUNOV

[Abstract] With the implementation of the decisions and directives of the CC CPSU and the Council of Ministers of the USSR on "Further Measures for Improving Public Health", mass screening of the entire Soviet population [dispensarization] has become a reality. However, new measures require new approaches both from physicians and administrators, as well as cooperation and understanding among all the parties involved in Soviet public health. Considering the fact that the incidence of coronary heart disease ranges from 14% (Moscow) to 8% (Tashkent) among 40-59 year old males in the various regions of the USSR, it is obvious that special attention has to be accorded to cardiovascular problems and their risk factors. Such risk factors, even among children, are represented by hypertension, smoking, and hypercholesterolemia. It is evident that these factors can be controlled in an effective manner. For example, medical management of hypertension can increase the percentage of normotensive individuals in a given locality from 11 to 28%, and correspondingly diminish the risk of ischemic heart disease. With intensive educational and medical efforts, similar results can be attained with anti-smoking programs and dietary education to lower blood lipoprotein levels. References 7: all Russian.
[069-12172]

UDC 616.98:578.8]-084

ADMINISTRATIVE AND MEDICAL PROBLEMS IN PREVENTION OF VIRAL DISEASES

Moscow SOVETSKOYE ZDRAVOOKHRANENIYE in Russian No 10, Oct 84
(manuscript received 13 Feb 84) pp 6-10

ZHDANOV, V. M., Institute of Virology imeni D. I. Ivanovskiy, Moscow

[Abstract] Basic difficulties in the prevention and control of viral diseases are predicted on the vast number of such pathogens that affect human beings,

varied symptomatology that renders diagnosis difficult, and--with the exception of a few cases--effective methods of prevention are lacking. In view of this, it is obvious that careful organizational plans have to be laid to render effective whatever means are available for the prevention and control of those viral diseases that can be successfully managed and controlled. This is particularly applicable to some of the more widespread viral diseases, such as influenza and acute respiratory diseases, hepatitis, herpetic infections, viral enteritides, measles, and cytomegalovirus infections. However, particular attention must be accorded to the first four entities named, in that, because of educational campaigns and medical progress, preventive measures can be a reality. It is the responsibility of administrators to effect a smooth transition and timely implementation of research findings to clinical application, since protection of the health of the Soviet people is the primary objective of Soviet medicine.
[069-12172]

UDC 616.2-053.2(-201):614.71

PEDIATRIC RESPIRATORY MORBIDITY IN RELATION TO URBAN AIR POLLUTION

Minsk ZDRAVOOKHRANENIYE BELORUSSII in Russian No 9, Sep 84
(manuscript received 25 Nov 83) pp 3-5

ZUBRITSKIY, M. K., Chair of Social Hygiene and Organization of Public Health,
Minsk Medical Institute

[Abstract] Studies conducted on the morbidity patterns in 684 children living in an urban environment with heavy air pollution were compared with similar statistical data for children residing in a section of the [same ?] city where air quality was acceptable. The incidence of respiratory morbidity for the children in the heavily polluted area for the period 1979-1981 was 1.2 to 1.6 higher than for the control group, with influenza and upper respiratory infections accounting for 66.7-72.2% of the pulmonary morbidity. Conversely, the percentage of clinically healthy children in the polluted area was 2.3-fold lower than in the area with normal air quality, and the percentage of those with serious medical problems 1.75-fold higher than in the control group of children. It is evident, then, that improvement of air quality in the urban environment is an important component in the improvement of the health status of the pediatric population. References 8: all Russian.
[093-12172]

CAUSES AND PREVENTION OF PERINATAL MORTALITY

Minsk ZDRAVOOKHRANENIYE BELORUSSII in Russian No 9, Sep 84
(manuscript received 19 Mar 84) pp 16-18

LAPUTINA, N. K., Chair of Obstetrics and Gynecology, Minsk Medical Institute;
Brest Oblast Department of Health

[Abstract] Case studies were analyzed of 606 perinatal mortality cases involving 582 maternity houses, to determine the causes and define possible preventive measures. The primary causes of the loss of term and preterm infants were asphyxia, congenital anomalies and birth trauma. In addition, in the preterm infants, pulmonary underdevelopment was also an important risk factor. Since premature deliveries, late toxemias of pregnancy and complicated labor were the key predisposing factors, it is evident that prenatal care and ambulatory services should show greater awareness and concern for the pregnant woman, and institute appropriate educational measures. The need for the improvements in health care delivery to the pregnant women is underscored by the fact that 35.7% of those who suffered a preinatal loss were either not seen by a physician until the time of delivery, or were first seen late in pregnancy. References 3: all Russian.

[093-12172]

UDC 612.66-053.2/.7-(22)(083.1)(048)

ANNOTATION OF METHODOLOGICAL RECOMMENDATIONS OF BELORUSSIAN SCIENTIFIC RESEARCH INSTITUTE FOR PROTECTION OF MOTHER AND CHILD

Minsk ZDRAVOOKHRANENIYE BELORUSSII in Russian No 9, Sep 84 p 60

[Review of book by VERENICH, G. I., titled 'Methodological Recommendations for Morphofunctional Assessment of Rural Children's Health', Metodicheskiye rekomendatsii po otsenke morfofunktsional'nykh pokazateley zdorov'ya sel'skikh detey, Minsk, 1984]

[Abstract] The recommendations proposed by the author are based on medical examination of 5,500 rural children, ranging in age from 7 to 17 years. Those studies had been carried out in 13 Rayons of the Brest, Gomel and Minsk Oblasts in the 1976-1978 period, and involved computer analysis of 22 morphofunctional indicators (height, weight, chest circumference, hematocrit, blood counts, vital capacity, etc.). On the basis of such data percentile graphs were constructed to plot a child's development, and determine whether a child is average (25th to 75th percentile), above average (75th to 90th percentile), below average (10th to 25th percentile), and so forth. The new data should facilitate the evaluation of the growth and development of rural children in the Belorussian SSR.

[093-12172]

ORGANIZATIONAL ASPECTS OF HEALTH SERVICES

Moscow SOVETSKOYE ZDRAVOOKHRANENIYE in Russian No 10, Oct 84
(manuscript received 4 Apr 84) pp 10-13

LISITSYN, Yu. P. and PYZHEV, S. V., Second Moscow Medical Institute imeni
N. I. Pirogov

[Abstract] Within the complexity of the modern society administration and organization of health services is an extremely important science, that is all too often neglected and relegated to a secondary position. Yet it is efficient overall organization that makes possible timely dissemination of medical knowledge and application of research findings to the patient's bedside. More often than not, suggestions regarding organizational proposals do not receive the recognition that they deserve, and as a result the entire health system suffers. Yet such proposals represent creative contributions on par with the more evident medical discoveries. At the Second Moscow Medical Institute, methods have been devised to protect and encourage organization ideas in the medical sector, and have received approval from the Scientific Council for Social Hygiene of the RSFSR Ministry of Health. Such ideas deserve patent-type protection, and efforts are underway to ensure that due recognition is given to innovators in this field of human endeavor. References 6: all Russian.

[069-12172]

UDC 613.95-07:572.51-053.2

EFFECTS OF SOCIAL AND HYGIENIC FACTORS ON PHYSICAL DEVELOPMENT OF CHILDREN AND ADOLESCENTS

Moscow SOVETSKOYE ZDRAVOOKHRANENIYA in Russian No 10, Oct 84
(manuscript received 21 Feb 84) pp 18-21

SOKOLOV, V. D., candidate of medical sciences, Chelyabinsk Medical Institute

[Abstract] Studies were conducted on the physical development of 3000 pupils in Chelyabinsk, 7 to 17 years old, in relation to the social and hygienic factors characterizing their living conditions. A direct relationship was found to prevail between the quality of life and physical development, which was also predicated on heredity and constitutive factors. It became evident that the ease of city living has an adverse effect on physical fitness of both the children and the adolescents. In view of this, it is evident that greater emphasis has to be placed on sports and physical training of children and adolescents in Chelyabinsk, a responsibility that has to be shared by the parents and educational administrators. References 6: all Russian.

[069-12172]

IMPROVEMENTS IN RURAL MEDICAL SERVICES

Tashkent SEL'SKOYE KHOZYAYSTVO UZBEKISTANA in Russian No 9, Sep 84

CHICHENIN, P., candidate of medical sciences, chief, Department of Health and Social Security, Uzbek SSR Council of Ministers

[Abstract] Methods of further improving the rural health services in the Uzbek SSR were the major topic of discussion at one of the meetings of the Bureau of the Central Committee of the Communist Party of Uzbekistan. Notice was taken of the fact that rural health services suffer by comparison with urban medical care, due in large part to high mobility of the medical personnel, shortage of hospital beds, and an inadequate network of pharmacies. However, definitive measures have been taken to correct such shortcomings, which were particularly acute in the Bukhara Oblast and Karakalpak ASSR, and data are presented on the actual expenditures. Additional care is being taken to insure sufficient quantities of drugs that are in high demand, and the creation of day care centers in the rural setting. Special efforts are being made to provide for continuing education of the rural medical personnel, and to equip the available facilities with the latest in medical technology. [058-12172]

INADEQUACY OF INDUSTRIAL HEALTH SERVICES IN KHARKOV OBLAST

Moscow MEDITSINSKAYA GAZETA in Russian 21 Nov 84 p 2

KALITA, V., Meditsinskaya Gazeta correspondent, Kharkov

[Abstract] A survey of the various industrial factories and plants in Kharkov shows serious disregard for the health of workers, if measured on the basis of on-site clinics and other health-related facilities. With a few exceptions, such as the Kharkov Tractor Plant, many plants lack even elementary medical amenities, and the management gives the impression of being unconcerned. When was the last time anyone heard about a meeting to discuss salient features of industrial hygiene and medicine being held in Kharkov? Clearly, the problem of indifference is not limited to the higher echelons of industrial management, but also afflicts the medical authorities. In most cases the local city hospitals have small and inadequate clinics to serve the plants and factories in the vicinity, but that is clearly not enough and not in accord with the moral requirements of the Soviet State. [1630-12172]

PARTY CONCERN FOR MEDICAL SERVICES

Leningrad LENINGRADSKAYA PRAVDA in Russian 13 Sep 84 p 1

UNSIGNED

[Abstract] The Leningrad city committee of the Communist Party met 30 September 1984 at Smoln'nyy to discuss problems of party organization of the city to improve the material and equipment available for public health and to further improve medical services to the population. It was emphasized that Leningraders are working hard to meet the goals of the 11th Five-Year Plan. Socialist competition is increasing. Problems of improving health services are important in the overall plan for economic and social development of the city. Over 2000 medical institutions including 500 ambulatory clinics and polyclinics, 165 hospitals and a network of sanatoria and rest homes are represented. Lost working time morbidity has dropped more than 9% in the past three years. However, rayon party committees and construction party committees have not achieved total fulfillment for the plans of construction of public health projects; a number of clinics are in unsatisfactory physical condition; many scientific research institutes and medical schools have been slower to restructure their work in the light of the requirement of the central committee and council of ministers on measures to accelerate scientific and technical progress in the economy. Automated management systems are an absolute necessity for improvement in medical services.

[007-6508]

UDC 616-057-084.3

MEDICAL SCREENING IN OCCUPATIONAL PATHOLOGY

Moscow GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA in Russian No 10, Oct 84 (manuscript received 7 Dec 83) pp 5-9

POPOVA, T. B., MONAYENKOVA, A. M., PALAGUSHINA, A. I. and ALEKSEYEV, L. I., Institute of Labor Hygiene and Occupational Diseases, USSR Academy of Medical Sciences, Moscow

[Abstract] The June 1983 Plenum of the CC CPSU has set the guidelines for public health improvement in the USSR, the cornerstone of which is annual screening of the entire population. The program is being implemented with considerable success, with feedback reinforcement contributing to new innovations in carrying out the program. Application of this approach to industrial medicine has its own unique problems, in that planning and scheduling must be based on the different situations prevailing in each job-setting, and take into consideration potential effects on productivity. In addition, preventive medicine has to give careful consideration to the uniqueness of the various work situations, and tailor the various medical recommendations to actual on-site conditions in order for them to be effective in improving and maintaining the health of the working population. References 10: all Russian.

[1592-12172]

PREVENTION OF INEBRIATION AND ALCOHOLISM IN INDUSTRIAL SETTING

Moscow ZDRAVOOKHRANENIYE ROSSIYSKOY FEDERATSII in Russian No 10, Oct 84
(manuscript received 21 Feb 84) pp 34-36

GUREVICH, B. I. and GARBUZOV, G. I., Zaporozhye

[Abstract] Questionnaires, interviews, statistical and anamnestic studies were conducted that encompassed 80% of workers in an industrial setting to assess the status of inebriation and alcoholism. The workers were divided into four categories, ranging from nondrinkers to occasional social drinkers (29.2% of the total cohort), moderate drinkers (50.6%), heavy drinkers (16.3%), and confirmed alcoholics (3.9%). The latter two groups were found to account for 95% of the cases of disruption of work ethics and social discipline. Evaluation of the factors that were of key importance in the rehabilitation process of the alcoholics and heavy drinkers pointed to the importance of the home environment and conditions at work. Fellow workers and family members, were both found to exercise the greatest influence in instilling the kind of self-discipline that made medical and hygienic intervention successful. Finally, the effectiveness of the rehabilitation services has to be analyzed not on the basis of the length of remission, but on the social stability of the patient and his active contribution to society. [89-12172]

MEDICAL CERTIFICATION PROBLEMS IN IZHEVSK

Moscow MEDITSINSKAYA GAZETA in Russian 17 Oct 84 p 2

BORICH, I., Izhevsk

[Abstract] Problems related to recertification and promotion of Izhevsk Public Health Service veteran physicians were discussed with the experience of Maria Viken'yevna Zheltonskaya, an eminent physician with 40 years experience, as an example. A decree of the Udmurt Ministry of Health changing certification and promotion procedures was appealed to the republic Ministry of Health and the USSR Ministry of Health, which excepted pensioners from the new procedure. The vagueness, irrelevance and inappropriateness of questions used in recertification procedures was discussed and example of such questions were presented. [1569-2791]

RADIATION BIOLOGY

AGROINDUSTRIAL APPLICATIONS OF ATOM

Moscow PRAVDA in Russian 23 Oct 84 p 2

KUZIN, A., chairman of USSR Academy of Sciences Scientific Council on Problems of Radiobiology, corresponding member, USSR Academy of Sciences and KAUSHANSKIY, D., candidate of technical sciences, chairman of Radiation Biotechnology

[Abstract] Extension of the use of atomic radiation and radioactivity in bioengineering is described. Use of these phenomena in viniculture, poultry farming, seed improvement to increase crop yield and in solving problems related to the Food Program is described. It has been shown experimentally that ionizing radiation may completely suppress the vital activity of the grain weevil and other pests. A device used for this purpose has been in operation for several years at the Odessa port grain elevator. It can process 200 tons of grain in one hour. The apparatus was developed by scientists of the USSR Academy of Sciences Institute of Nuclear Physics and the All-Union Scientific Research Institute of Grain and Products of Its Reprocessing, USSR Ministry of Procurement. Cost of processing a ton of grain by this method is half of that required in the use of methyl bromide while the technological process is continuous and more effective. Construction of several more of these devices at several large grain elevators in the USSR is planned. Another radiation-biological method of insect-pest control involves the use of the effect of ionizing radiation on the genetic apparatus of the insect. Liberating "sterile" males makes it possible, even after 3 generations, to eliminate completely a population of pests in various regions. This method may be used successfully to control the dried bean beetle, the cabbage moth and the codling moth. Radiation processes for preserving food products (including pasteurization) have some important advantages over other methods since they make it possible to lengthen the period of preservation and to use new forms of packaging (packages from polymer materials, for example) and to produce products directly in a package and thus reduce losses. They also lighten labor and make labor automation possible. All of these procedures have been found to be safe.

[1566-2791]

PLANT MUTAGENESIS AND BACKGROUND RADIATION

Moscow IZVESTIYA AKADEMII NAUK SSSR. SERIYA BIOLOGICHESKAYA in Russian
No 5, Sep-Oct 84 (manuscript received pp 645-655)

DUBININ, N. P. and KAL'CHENKO, V. A., Institute of General Genetics, USSR
Academy of Sciences, Moscow

[Abstract] Cornflowers (*Centaurea scabiosa*) were employed in the determination of the effects of background levels of ionizing radiation on the rate of plant mutagenesis, by cultivation of the plants on fields with controlled levels of $^{90}\text{Sr}^{90}\text{Y}$. Growth of the plants on fields imparting a radiation dose per generation of 0.4 (3×10^{-4} Gy/day), 5.0 (4×10^{-3} Gy/day), or 8.5 Gy (7×10^{-3} Gy/day) resulted in a mutation frequency of 0.0078, 0.04 and 0.07, respectively, in the Lap locus (leucine aminopeptidase), these figures exceeded, by a factor of a thousand or more, control frequencies. Chlorophyll mutations also showed a dose-dependent relationship (0.0015, 0.0048 and 0.0217, respectively), as did the incidence of chromosomal abnormalities. However, eventually (after many years) the frequency of chromosomal abnormalities fell to baseline levels, suggesting radioadaptation in the irradiated plants. These observations underscore the contribution of background radiation to genetic variability in plants, and the fact that such variability may well be a factor in the evolution of populations that are relatively radioresistant and in the selection of genetic mechanisms that regulate mutagenesis itself. Figures 2; references 29: 17 Russian, 12 Western.
[080-12172]

VIROLOGY

SPECIFICS OF PRODUCTION AND CHARACTERISTICS OF COLD-ADAPTED VARIANT OF A/PR/8/34 INFLUENZA VIRUS

Bratislava ACTA VIROLOGICA in Russian Vol 28, No 1, Jan 84
(manuscript received 22 Dec 82) pp 19-25

YEGOROV, A. Yu., MEDVEDEVA, T. Ye., POLEZHAYEV, F. I., ALEKSANDROVA, G. I. and GENDON, Yu. Z., Scientific Research Institute of Experimental Medicine, USSR Academy of Medical Sciences, Leningrad; Moscow Scientific Research Institute of Viral Preparations, USSR Ministry of Health, Moscow

[Abstract] An attempt was made to adapt the strain A/PR/8/34 to reproduction at 25°C in order to give the virus valuable biological properties inherent in cold adapted viruses while preserving the initial high reproductiveness at the optimal temperature. The method of successive passages of the virus in chick embryos at a temperature reduced to 25°C was used. Embryos were infected with the original A/PR/8/34 virus and incubated for 72 to 96 hours. The total number of passages at 25°C was 60. After 30 passages at 25°C the virus reproduced less well at 40°C. Sixty passages at low temperature resulted in the production of cold adapted variants with sharply reduced capability for reproduction at 40°C, but still retaining their capability for high reproductiveness at 34°C. The cold-adapted variant A/PR/8/59/1 acquired the ts mutation in gene 6 responsible for the synthesis of neuraminidase surface protein, as well as 4 genes coating nonglycosylized proteins P3, P2, NP and M, with greatly reduced capability for reproduction in chick embryos at 40°C, and significantly reduced pathogenicity for chick embryos. This variant lost its pathogenicity for mice by intranasal infection, had greatly reduced capability for reproduction in mouse lungs, but retained high reproduction rates in chick embryos at 34°C. Figure 1; references 8: 2 Russian, 6 Western. [050-6508]

ANTIGEN RELATIONSHIPS BETWEEN TICK-BORNE ENCEPHALITIS COMPLEX VIRUSES STUDIED BY MONOCLONAL ANTIBODY METHOD

Bratislava ACTA VIROLOGICA in Russian Vol 28, No 1, Jan 84
(manuscript received 9 Feb 83) pp 64-68

GRESIKOVA, M. and SEKEYOVA, M., Institute of Virology, Slovak Academy of Sciences, Bratislava, Czechoslovakia

[Abstract] The antigen connection between viruses belonging to the tick-borne encephalitis complex was studied by means of monoclonal antibodies. Nine

strains of the complex were compared. It was shown that hybridomas produce class IgM antibodies, i.e., the neutralizing activity of the monoclonal antibodies was observed only when anti-IgM antibodies were added. The monoclonal antibodies did not have complement-binding activity, but did have THA activity. Using monoclonal antibodies to the Skalica strain it became possible in the hemagglutination inhibition reaction to differentiate the Powassan virus isolated in non-Arctic areas from the tick-borne encephalitis complex virus isolated in Palearctic regions. References 8: 2 Russian, 6 Western.
[050-6508]

CONFERENCES

UDC 616.15+615.38J:061.22(47+57)"1983"

SUMMARY OF WORK OF 4TH PLENARY SESSION OF ALL-UNION SCIENTIFIC SOCIETY OF HEMATOLOGISTS AND TRANSFUSION SPECIALISTS

Moscow GEMATOLOGIYA I TRANSFUZIOLOGIYA in Russian Vol 29, No 10, Oct 84
pp 57-59

KHOKLOVA, M. P., professor and SAFAROVA, A. A., Central Scientific Research
Institute of Hematology and Blood Transfusion, USSR Ministry of Health, Moscow

[Abstract] Sessions of the conference emphasized problems related to (1) hemaglobulinopathies, (2) anemias and (3) medical problems of blood collection and storage and related management problems. A. M. Akhundova (Baku), deceased, presented some of her extensive personal data concerning the clinic and treatment of beta-thalassemia which data included a treatment program (transfusion of hemodes and rheopolyglucin and use of heparin) in hematological crises and listed indications for splenectomy. S. M. Bakhramov (Tashkent) discussed results of clinical and demographic studies of hereditary erythrocytopathies in the UzSSR which describe a spectrum of hereditary hemolytic anemias and the nature of their spread among ethnic groups of the country. R. F. Gaskavtseva and M. N. Kulagin (Moscow) summarized results of studies of the prevalence and genetic heterogeneity of thalassemia in some Central Asian Republics and the Transcaucasus, which studies showed that the basic causes of uneven distribution of hemaglobulinopathies may be isolation and inbreeding, resulting from ethnogenetic subdivision of these populations. Reduction of incidence of the condition may be achieved by detecting married couples, heterozygotic for thalassemia or other anomalous hemoglobins and use of medical-genetic consultation to make prognoses concerning these couples' future progeny. A paper by A. G. Fedotenkova, V. V. Kochemasova et al. (Moscow) described management of blood transfusion supplies in the USSR. The paper described procedures for obtaining donors, especially volunteers, data on the rate of increase of blood supplies and production of blood components and preparations with consideration of current methods of transfusion therapy in the clinic. The report emphasized the need for improvement of the system of management of blood supplies, expansion of production rates, extension of the range of blood preparation components and increase of the number of donors. Basic aspects of development of a blood supply management system should include: centralization of control, improvement of planning and automation of as many aspects as possible with extensive introduction of computer and economic and mathematical methods. Reports by A. F. Reshetov and P. A. Kurtsev (Moscow), V. T. Chkhayidze et al. (Tbilisi) and N. T. Terekhova et al. (Kiev)

described problems concerning attempts to increase the number of blood donors, the importance of explaining that there is no danger in giving 400 ml of blood, projecting the number of donors in relation to the number of potential donors in the population, improvement in planning and conducting blood collections in relation to the current demographic situation and ways to increase the number of immune donors and relative-donors. E. D. Buglova (Minsk) discussed the economic aspects of increasing amounts of blood obtained from donors. A list of recommendations, compiled for All-Union and republican scientific societies of hematologists and blood transfusion technologists, was reprinted in the article.

[1602-2791]

UDC 613.644-084:061.3(47+57)"1983/84"

MEETING OF SECTION ON "NOISE, VIBRATION, ULTRASOUND AND INFRASOUND" OF ALL-UNION PROBLEMATICS COMMISSION ON "SCIENTIFIC FOUNDATIONS OF INDUSTRIAL HYGIENE AND OCCUPATIONAL DISEASES" AND SEMINAR ON "BASIC TRENDS IN PREVENTION OF ADVERSE EFFECTS OF NOISE AND VIBRATION" (KAUNAS, 14-16 SEP 83)

Moscow GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYE in Russian No 10, Oct 84 pp 59-60

PROKOPENKO, L. V., Institute of Labor Hygiene and Occupational Diseases, USSR Academy of Medical Sciences, Moscow

[Abstract] A routine meeting of the Section on "Noise, Vibration, Ultrasound and Infrasound", of the All-Union Problematics Commission on "Scientific Foundations of Labor Hygiene and Occupational Diseases", for the Baltic Republics was held at the Kaunas Medical Institute on September 14-16, 1983. The meeting was also noteworthy because of the fact that, for the first time, it encompasses a seminar on "Basic trends in the Prevention of Adverse Effects of Noise and Vibration", which was attended by 60 leading specialists in the field of prevention. The seminar was opened by Professor A. Yu. Zhyugzhda (Kaunas), who emphasized the importance of such a session, while A. S. Vilikis (Lithuanian SSR Ministry of Health), N. I. Bol'shakova (Latvian SSR Ministry of Health), and P. Ye. Krooni (Estonian SSR Ministry of Health) reported on the various measures and efforts now in effect, and the problems that still remain to be overcome. Special reports on noise and vibration control and prevention were also covered by specialists representing the Railroad Institute of Hygiene (Moscow), the Krivoy Rog and Angara Institutes of Labor Hygiene and Occupational Diseases, the Republic Acoustics Scientific Center (Yerevan), the USSR Academy of Medical Sciences Institute of Labor Hygiene and Occupational Diseases, Kaunas Medical Institute, Uzbek Institute of Sanitation, Hygiene and Occupational Diseases, Belorussian Institute of Sanitation and Hygiene, and the Scientific Research Institute of Water Transport. Yu. F. Fabionavichus (Vil'nyus) reported on more than 68 projects involving the design and construction of sound-absorbing and sound-isolating architectural details and devices. G. A. Suvorov reported on legal and instructional documents pertaining to noise and vibration, and the establishment of enforceable

standards. E. I. Denisov described a new portable sound-and-vibration measuring apparatus, VShV-003, manufactured by Vibropribor. The Section concluded its business with a set of recommendation to the USSR Ministry of Health for standardization of threshold limit values for noise and vibration. [1592-12172]

UDC 617-001.3-06:616-002.3-022:061.3(47+57)1984

ALL-UNION CONFERENCE ON PREVENTION AND TREATMENT OF MECHANICAL TRAUMA
COMPLICATED BY PYOGENIC INFECTIONS

Moscow ZHURNAL VOPROSY NEYROKHIRURGII IMENI N. N. BURDENKO in Russian No 5,
Sep-Oct 84 pp 59-60

IMSHENETSKAYA, V. F., doctor of medical sciences, Moscow

[Abstract] On February 28-29, 1984 an All-Union Conference on the Prevention and Treatment of Mechanical Trauma at Different Sites, Complicated by Pyogenic Infections was held in Saratov. The Conference was attended by 350 participants and covered all aspects of pyogenic infections of mechanical trauma. Talks on the prevention and management of pyogenic complications were of particular interest, and included reports on surgical wound management, ultrasonic wound treatment, vacuum treatment, laser irradiation, irrigation-aspiration approaches, and a number of other procedures. In recent years more attention has been paid to gnotobiologic isolation, treatment within an abacterial environment, and the use of oxygen barotherapy. V. F. Imshenetskaya (Inst. of Neurosurgery imeni N. N. Burdenko) covered microbial wound contaminations and delineated dominant species and the results of studies with the cephalosporin group of antibiotics. B. M. Rachkov, V. P. Rayevskiy, and Ye. P. Popov (Inst. of Neurosurg. imeni Polenov) dealt with experimental and clinical studies on endolymphatic administration of gentamycin, ceforin and kefzole in craniocerebral and severe pulmonary complications, while Ye. N. Rodyukova, I. N. Stupak and T. A. Solov'yeva (Novosibirsk Sci. Res. Inst. of Traumatol. and Orthopedics) reported on dye tests (NST-test) in evaluating phagocytic function. [1603-12172]

ECOLOGIC GENETICS

Kishinev SOVETSKAYA MOLDAVIYA in Russian 2 Nov 84 p 3

[Abstract] A conference on "Ecologic Genetics of Plants and Animals" was held in Kishinev, to address the problems inherent in breeding highly productive domestic animals and crops. The problem of genetics and evolution were dealt with by Academician N. P. Dubinin of the USSR Academy of Sciences, while the theoretical and practical aspects of ecologic genetics were covered

by A. A. Zhuchenko, president of the Moldavian SSR Academy of Sciences, and corresponding member of the USSR Academy of Sciences. In addition, conference participants had the opportunity to acquaint themselves with the research and facilities devoted to ecological genetics at the Moldavian SSR Academy of Sciences.

[108-12172]

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